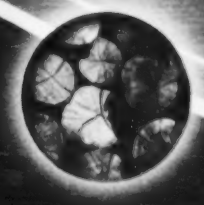
State of the Debate

BOREAL FUTURES

Governance, Conservation and Development in Canada's Boreal



National Round Table on the Environment and the Economy

Table ronde nationale sur l'environnement et l'économie

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BOREAL FUTURES

Governance, Conservation and Development in Canada's Boreal

NRTEE MANDATE

About Us

The National Round Table on the Environment and the Economy (NRTEE) is dedicated to exploring new opportunities to integrate environmental preservation and economic development, in order to sustain Canada's prosperity and secure its future.

Drawing on the wealth of insight and experience represented by our diverse membership, our mission is to generate and promote innovative ways to advance Canada's environmental and economic interests in combination, rather than in isolation. In this capacity, it examines the environmental and economic implications of priority issues and offers advice on how best to reconcile the sometimes competing interests of economic prosperity and environmental preservation.

The NRTEE was established in 1994 as an independent advisory body reporting to governments and the Canadian public. Appointed by the Prime Minister, our members are distinguished leaders in business and labour, universities, environmental organizations, Aboriginal communities and municipalities.

How We Work

The NRTEE is structured as a round table in order to facilitate the unfettered exchange of ideas. By offering our members a safe haven for discussion, the NRTEE helps reconcile positions that have traditionally been at odds.

The NRTEE is also a coalition builder, reaching out to organizations that share our vision for sustainable development. We believe that affiliation with like-minded partners will spark creativity and generate the momentum needed for success.

And finally, the NRTEE acts as an advocate for positive change, raising awareness among Canadians and their governments about the challenges of sustainable development and promoting viable solutions.

We also maintain a secretariat, which commissions and analyzes the research required by our members in their work. The secretariat also furnishes administrative, promotional and communications support to the NRTEE.

The NRTEE's *State of the Debate* reports synthesize the results of stakeholder consultations on potential opportunities for sustainable development. They summarize the extent of consensus and reasons for disagreements, review the consequences of action or inaction, and recommend steps specific stakeholders can take to promote sustainability.

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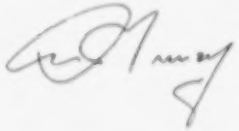
PREFACE

e National Round Table on the Environment and
Economy (NRTEE) established the *Securing*
nada's Natural Capital: The Boreal Forest program
examine how to advance conservation in balance
th economic activity on public lands allocated for
ource development in Canada's boreal through
gulatory and fiscal policy reform.

e impetus for this program stemmed largely
m the findings of the NRTEE's Conservation of
tural Heritage program, which determined that
e boreal region is of prime importance to Canada
d Canadians – ecologically, economically, and
cially, and that a time-limited opportunity exists
ensure a true balance between the environment
d the economy occurs.

As Chair of the NRTEE, I am therefore pleased to introduce the *State of the Debate* report, which details the program's key findings and recommendations. The report is based on the work of a multistakeholder process, which brought together representatives from the federal and provincial governments, major resource industry sectors, Aboriginal peoples, non-governmental organizations and academia to examine the state of the boreal region today, and to make recommendations which, if implemented, would achieve sustainability in this nationally – and globally – significant region.



Glen Murray
Chair

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EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

The Boreal Challenge

The boreal is Canada's largest ecosystem, accounting for more than half the nation's land area. Canada also has about a third of the world's boreal, more than any country except Russia. The boreal performs essential ecological services, from helping to regulate the earth's climate to preserving biodiversity and conserving water. It is home to a million Aboriginal people, and hundreds of remote and rural communities. Its natural resources support some of the country's most important industries, including oil and natural gas, mining and forestry.

Today, like much of the boreal on the planet, some components of Canada's boreal landscape (particularly the forested areas) are experiencing human-caused changes as a result of resource development – largely in the forest, hydrocarbon, hydroelectric and mineral development sectors. Concerns are emerging about the future health of the boreal in Canada if current trends continue.

Canada has a special responsibility – and opportunity – to be a steward of one of the most important ecosystems in the world. Yet the future of the region is highly uncertain: there are many diverging interests and perspectives, a mix of constitutional responsibilities, and no common vision of how Canada should steward the boreal.

In addition, the future of the boreal is likely to be shaped by a complex set of international and domestic trends. Of special importance are:

- *global economic trends*, such as world commodity prices and trade policies that constrain or benefit Canada's resource companies, and market-driven changes such as consumer-based initiatives and environmental accountability in corporate disclosure;
- broader *domestic government policy priorities and trends*, such as provincial resource development policies, and federal regulatory and fiscal policy reforms;
- the role of *Aboriginal peoples*, particularly in light of how the fundamental questions of land claims and treaty rights evolve; and

The boreal performs essential ecological services, from helping to regulate the earth's climate to preserving biodiversity and conserving water.

- *climate change* impacts, the scale of which remains uncertain, but which some scientists warn could "trump" all other factors in the boreal.

The boreal's past does not have to be its future – historical trends in the "ecological footprint" of development need not continue. Rather, Canadians have an opportunity to put in place the institutions, policy measures and practices that could create a better balance of conservation and development in the region.

The Boreal Forest Program

To provide an independent perspective on the national dialogue that is taking place about the future of Canada's boreal, the National Round Table on the Environment and the Economy (NRTEE) established a Boreal Forest Program. The Program's mandate was to *examine how to advance conservation in balance with economic activity on public lands allocated for resource development in Canada's boreal – the "working landscape" – through regulatory and fiscal policy reform.* However, the lessons learned in the working landscape of the boreal can be applied to other areas in the boreal still largely unallocated or unaffected by development – where there is still the opportunity to "do it right."

Preparation of this *State of the Debate* report has been directed by a task force of Canadians with direct experience and interest in the boreal. Members included individuals from the federal and provincial governments, the major resource industry sectors,

national Aboriginal organizations, civil society (non-government) organizations, and academia. The group was co-chaired by two members of the NRTEE.

Much of the Boreal Forest Program's work focused on questions of governance: the exercise of authority in pursuit of an objective. Governance involves *why* and *how* decisions are made, whether by a government, a corporation, a community or a group. Public and private governance questions have emerged as a major challenge to sustainable development in Canada.

The state of the debate sections in the report reflect what the NRTEE has heard throughout the Boreal Forest Program during the dialogue among task force members and during consultations held with various interests: government, industry, Aboriginal, community, civil society representatives and other groups. The state of the debate sections identify areas where there appears to be broad consensus, as well as areas where there continue to be differing perspectives.

Opportunities for Governance Action

In reviewing past experiences on the working landscape of Canada's boreal, as well as key global and domestic policy trends, the NRTEE concludes that there are opportunities for advancing conservation in balance with development in the region through initiatives in four interrelated areas of governance:

1. *Leadership, education and information* to support sound decision making in the boreal and to raise awareness among decision makers and Canadians of the boreal's importance;
2. *Ecological fiscal reform* to encourage conservation by industry and others active in the boreal, through economic instruments;
3. *Innovations in planning and regulatory frameworks* to promote greater coordination within and across jurisdictions and better integration of multiple objectives; and
4. *Institution and capacity building* to enable the effective participation of Aboriginal peoples in decisions affecting their future.

Table Ex-1 summarizes the seven recommendations for governance actions under these four areas, including the desired results and responsible parties. The recommendations are directed not only at the federal government but also at provincial and territorial governments, industry, Aboriginal organizations, communities and civil society organizations. All these parties have a clear interest in the future of the boreal.

The recommendations are:

1. Convene a national leaders' conference on the future of Canada's boreal.

The federal government should serve as a catalyst for developing a shared, national vision of the future of the boreal by convening in 2006 a national leaders' conference bringing together leaders from all jurisdictions and sectors, chaired by the Prime Minister, on the future of Canada's boreal. The leaders' conference would communicate to Canadians that the future of the boreal is a shared national responsibility, develop a consensus on the future direction of the boreal, and identify the role Canada should play internationally in promoting the interests of the world's boreal region.

2. Establish a boreal Network of Centres of Excellence.

Federal, provincial and territorial governments and other funding partners should cooperate to establish a new Network of Centres of Excellence (NCE) on the boreal. This network would provide leadership and promote cross-jurisdictional and multi-sectoral research and cooperation on the production, sharing and application of information on the boreal in support of sound decision making. A boreal NCE would be part of the established and well-regarded national program of research partnerships among universities, industry, government and not-for-profit organizations. It could be tasked with addressing information gaps and championing the need for integration in the area of boreal information, and with addressing the pressing public policy challenges the boreal is currently experiencing.

3. Improve the capacity for climate change adaptation in the boreal.

Federal, provincial, territorial, Aboriginal and community-level governments, industry, and civil society organizations should cooperate to:

- improve understanding of how climate change may affect the boreal and its residents;
- help build awareness among their constituencies of the challenges posed by climate change and of the need to put in place adaptation strategies to reduce the environmental, social and economic impacts of climate change; and

- support the development and implementation of adaptation strategies at the sectoral and community levels to reduce the potential social and economic impacts of climate change in the boreal.

The goal would be to encourage governments, industries and communities to think about climate change adaptation in the boreal not as a separate issue but very much as part of their overall economic and social development plans for the future. Climate change adaptation strategies ought to be viewed as a risk management component of sustainable resource management and community development plans.

4. Expand the use of fiscal incentives to promote conservation by resource industries in the boreal.

Federal, provincial and territorial governments should work together to coordinate the expanded use of fiscal incentives to encourage the early adoption of environmentally friendly technologies and processes in the boreal. Two measures appear to be particularly promising:

- amending the Scientific Research and Experimental Development Program to make it easier to use in developing innovative practices that have environmental benefits; and
- coordinating the use of federal and provincial transitional tax credits to encourage the early adoption of environmentally friendly technologies.

5. Strengthen integrated landscape planning and management through innovative approaches.

Federal, provincial, territorial, Aboriginal and community-level governments should work together to strengthen integrated landscape planning and management in the boreal by introducing and evaluating innovative planning, tenure and management mechanisms. Given the potential for cumulative environmental effects arising from a number of resource development activities on the same landscapes, comprehensive and integrated approaches to land and resource planning and management are needed to set and achieve landscape-level objectives. These integrated approaches are commonly referred to as integrated landscape management (ILM).

Among a number of opportunities to pursue ILM pilot projects, two in particular are highlighted:

- "model boreal areas," building on the highly successful model forest concept; and
- tenure/licensing reforms providing for an "unbundling" of rights to the land base, which would allow the exchange and trading of rights for public goods (reforms could include the application of conservation easements on public lands and the implementation of transferable development rights).

6. Strengthen institutional arrangements for more effective engagement of Aboriginal peoples.

Federal, provincial, territorial and Aboriginal governments should work together to facilitate the participation of Aboriginal communities in boreal planning and management processes through effective policy and institutional arrangements that incorporate Aboriginal land rights and interests.

The joint accords signed in May 2005 between the federal government and the leaders of five national Aboriginal organizations are a major step in this direction. So, too, is the recent progress of several provinces in establishing policy positions on consultation and in encouraging forest-based economic development. The challenge now is to develop institutional arrangements that will remove the uncertainty around Aboriginal issues and translate long-standing commitments into cooperative on-the-ground action among all governments and Aboriginal peoples. The boreal – with its complex web of shared jurisdiction, long history of resource development and significant Aboriginal presence – presents an important and urgent opportunity to implement the accords and build on worthwhile provincial initiatives.

7. Support capacity building in Aboriginal communities.

Federal, provincial, territorial and Aboriginal governments, industry and civil society organizations should support the capacity-building initiatives of Aboriginal communities, enabling them to effectively manage their interests in the boreal.

Building community capacity is key if Aboriginal peoples are to engage in boreal planning and management initiatives. A related need is to ensure that Aboriginal communities are able to develop and implement sustainable business opportunities in the boreal. Alternative strategies for Aboriginal community economic development could include strengthening opportunities in the management and administration of parks and protected areas, recreation and tourism initiatives, and niche market industries.

Shared Perspectives, Differing Perspectives: State of the Debate

The NRTEE identified a broad consensus among a wide range of government, industry, community and Aboriginal representatives on the following fundamental points:

- that the boreal is highly important to Canada and the world – ecologically, economically and socially;
- that the question of the boreal's future is one that merits the attention of the most senior political, corporate, Aboriginal and community leaders;
- that a short list of key international and domestic factors will affect the future of the boreal, in particular world commodity prices and trade policies, the impacts of market-driven approaches in innovation and green consumerism, domestic policy trends, Aboriginal involvement and global climate change;
- that immediate opportunities for advancing conservation in the boreal are worth exploring in four general areas: leadership, education and information; planning and regulatory processes; fiscal policies; and Aboriginal involvement; and
- that any effective measures will demand the participation and cooperation of all parties with an interest in the boreal – governments, industry, communities, Aboriginal peoples and civil society organizations.

At the same time, the NRTEE identified a number of areas where differing views prevail and no consensus was found. These areas include:

- the extent to which some current regulatory and fiscal measures that are in place to encourage resource development act as disincentives to conservation in the boreal;
- the likely future trends in the "ecological footprints" of the major resource sectors and the extent to which past trends should be extrapolated into the future;
- the extent to which a broader mix of innovative and even challenging policy measures, such as major tenure/licensing and planning reforms and a richer array of ecological fiscal reform measures, should be applied in the boreal;
- the extent to which broader climate change policy measures, such as emissions trading and other fiscal reforms, should be applied to promote conservation in the boreal; and
- how fundamental Aboriginal issues such as land claims and treaty rights should be addressed to enable Aboriginal peoples to participate meaningfully in future boreal initiatives.

The scope of these areas of divergence points to the complexity of policy making for the boreal in Canada. There are no simple responses, and there are many different perspectives. The fundamental concern is that, as yet, there is no shared overall vision of where Canada should be headed with respect to the future of the boreal.

The Need for Leadership

In the view of the NRTEE, there are immediate and practical opportunities for advancing conservation in balance with economic development in the boreal. Taken together, these initiatives can help equip Canadians with the attitudes, practices and partnerships to respond effectively to whatever future evolves.

Perhaps none of the areas of governance action are as important, at least in the immediate term, as the need for *leadership*. The success or failure of Canadians' efforts to work for the future of the boreal will be determined, in large part, by how leaders in many areas – governments, industry, communities, Aboriginal organizations and civil society – respond to the boreal challenge.

This *State of the Debate* report can act as a guide for these leaders. The NRTEE is confident that Canadian leaders will recognize these opportunities and take responsible action – and that the future of the world's boreal will be better because of that.

TABLE EX-1: SUMMARY OF PROPOSED OPPORTUNITIES FOR GOVERNANCE ACTIONS

GOVERNANCE AREA	DESIRED RESULTS	RECOMMENDATIONS	PRIMARY RESPONSIBILITY
1. Leadership, Education and Information	Canadians understand the environmental, social and economic importance of the boreal, both in Canada and internationally, and share a vision for its future Canada is an international leader in promoting sound conservation of the world's boreal regions in balance with economic and social development Information about the boreal is timely, relevant and easily available to government, corporate, community and other decision makers	1. Convene a national leaders' conference on the future of Canada's boreal	Federal government
		2. Establish a boreal Network of Centres of Excellence	Federal, provincial and territorial governments Other NCE funding partners
		3. Improve the capacity for climate change adaptation in the boreal	Federal, provincial, territorial, Aboriginal and community-level governments Industry Civil society groups
2. Economic Instruments	More resource companies adopt conservation practices in the boreal in response to fiscal incentives	4. Expand the use of fiscal incentives to promote conservation by resource industries in the boreal	Federal, provincial and territorial governments
3. Planning and Regulatory Processes	Planning and management processes relating to the boreal are well coordinated within and across jurisdictions, and effectively integrate multiple uses	5. Strengthen integrated landscape planning and management through innovative approaches	Federal, provincial, territorial, Aboriginal and community-level governments
4. Aboriginal Peoples	Aboriginal peoples are empowered to contribute to, and benefit from conservation and development initiatives in Canada's boreal	6. Strengthen institutional arrangements for more effective engagement of Aboriginal peoples	Federal, provincial, territorial and Aboriginal governments
		7. Support capacity building in Aboriginal communities	Federal, provincial, territorial and Aboriginal governments Industry Civil society groups

INTRODUCTION

1

1 INTRODUCTION

1.1 Looking at the Future of Canada's Boreal

The boreal, with its vast expanses of parklands, forests, lakes, wetlands and taiga, defines much of the Canadian landscape.[1] A thousand kilometres and more wide in some parts, it sweeps across Newfoundland and Labrador, northern and central Quebec, Ontario and the Prairies, reaching into northeastern British Columbia, the Northwest Territories and Yukon. It is part of the largest terrestrial ecosystem on the planet – the global boreal has one third of the earth's forested land and its largest expanses of lakes and wetlands.

Today, like much of the boreal on the planet, some components of Canada's boreal landscape are experiencing human-caused changes as a result of resource development – largely related to forest, oil and gas, hydroelectric and mineral operations. Concerns are emerging about the future health of the boreal in Canada if current trends continue.

However, the boreal's past does not have to be its future – historical trends need not continue. There is an opportunity to put in place the institutions, policy measures and practices that can create a better balance of conservation and development in the region.

Can this opportunity be realized? There is no shared vision on the way ahead for the boreal. Many see the region's resources as a source of economic growth and jobs. Others urge that its ecological roles be protected as a first priority. Still others point to the potential for the boreal to support the economic and social development of Aboriginal communities.

What, then, will the future of Canada's boreal look like, amid these competing concerns? Which of the region's possible futures will Canadians choose?

PRECURSOR TO THE BOREAL FOREST PROGRAM: THE NRTEE'S CONSERVATION OF NATURAL HERITAGE PROGRAM

In 2000, the National Round Table on the Environment and the Economy (NRTEE) identified conservation of natural capital as one of the key sustainability issues facing Canada at the turn of the millennium. The following year, the NRTEE established its Conservation of Natural Heritage Program to begin addressing this challenge.

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The work of that program resulted in a *State of the Debate* report entitled *Securing Canada's Natural Capital: A Vision for Nature Conservation in the 21st Century*, released in June 2003. The report described the state of nature conservation in Canada, identified key barriers to further progress on conservation, and presented a set of 20 recommendations that, if applied, would position Canada as a global leader in conservation by 2010.

Three findings from that first report prompted the NRTEE to undertake a second program aimed at conserving Canada's natural heritage:

- First, conservation needs to take place not only in parks and protected areas but also on the working landscape – the portion of land outside the parks and protected areas where industrial activities such as forestry, oil and gas exploration and development, mining and hydroelectric development occur. The NRTEE found that in many instances industry may be willing to plan for conservation where it operates, but that there are few incentives for industry to play a larger role.

The boreal, with its vast expanses of parklands, forests, lakes, wetlands and taiga, defines much of the Canadian landscape. A thousand kilometres and more wide in some parts, it sweeps across Newfoundland and Labrador, northern and central Quebec, Ontario and the Prairies, reaching into northeastern British Columbia, the Northwest Territories and Yukon. It is part of the largest terrestrial ecosystem on the planet – the global boreal has one third of the earth's forested land and its largest expanses of lakes and wetlands.

- Second, there is a time-limited opportunity to secure the natural capital in Canada's boreal. Pressure on this region is growing as resource development moves farther northward and touches more and more remote areas.
- Third, fiscal policy generally has not been used in Canada in a strategic way to influence public and corporate decisions in support of conservation.

1.2 The Boreal Forest Program

OBJECTIVE

To build on the work of the earlier program and provide perspectives on the national dialogue that is taking place about the future of Canada's boreal, the NRTEE established the Boreal Forest Program in November 2003. The Program's mandate was to *examine how to advance conservation in balance with economic activity on public lands allocated for resource development in Canada's boreal – the "working landscape" – through regulatory and fiscal policy reform.*

SCOPE

The NRTEE believes that parks and other protected areas are a key aspect of the boreal, and are critical components of any conservation initiative. In its earlier Conservation of Natural Heritage Program, the NRTEE examined the role of parks and protected areas in conservation across the country. However, that program did not touch upon how conservation operates on the *working* landscape (see "Definitions of Key Terms" below).

It was determined that the new program would explore conservation on the working landscape, allowing for a detailed examination of existing and potential conservation practices in those areas of the boreal currently experiencing industrial-level activity. In this way, the lessons learned in the working landscapes of the boreal could be applied to other areas in the boreal still largely unallocated or unaffected by development – areas where there is still the opportunity to "do it right."

FOCUS ON GOVERNANCE

Much of the Boreal Forest Program's work focused on issues of governance – issues that have emerged as a major challenge in work on sustainable development in Canada. Governance is the exercise of authority in pursuit of an objective, involving *why* and *how* decisions are made, whether by a government, a corporation, a community or a group. In general, governance is made up of the following elements:

- *jurisdiction:* the constitutional responsibility for an issue;
- *mandate:* the responsibility for an issue within that jurisdiction;
- *leadership/vision:* the creation of goals or a mission within that jurisdiction or mandate;
- *public policy instruments:* the legislative, regulatory, fiscal, monetary, communication and other policy tools that a government or organization can apply in support of its vision or mandate; and
- *organizational capacity:* the ability of a government or organization, including its awareness and fiscal capacity, to use the policy instruments to deliver on objectives and priorities.

Each of these elements, alone and in combination with the others, is affecting how the boreal and its resources are being managed. Each must be taken into account in any effort to look at the region's future.

Approaches to fiscal and regulatory policies were of particular importance in the Program's analysis and dialogue. *Economic instruments*, including fiscal policy and market measures, offer governments a powerful means of influencing outcomes in the economy. Similarly, *regulatory and planning processes* are key drivers in determining how resource development is allocated and managed, with clear implications for conservation and sustainable development.

TASK FORCE EXPERTISE

The work of the Boreal Forest Program and preparation of this *State of the Debate* report have been directed by a task force of Canadians with direct experience and interest in the boreal. Members included individuals from the federal and provincial governments, the major resource industry sectors, national Aboriginal organizations, civil society (non-government) organizations and academia. The group was co-chaired by two members of the NRTEE.

The task force sought to identify areas of consensus and disagreement among different interests, as well as to explore ideas that could be proposed for furthering the goal of conservation in the boreal in balance with economic activity.

RESEARCH APPROACH

The work of the task force was supported by case studies examining three very different working landscapes in Canada's boreal:

- the Muskwa-Kechika Management Area (M-KMA) in northeastern British Columbia and southern portions of Yukon and the Northwest Territories;
- the Al-Pac Forest Management Area in northeastern Alberta; and
- the Abitibi-Témiscamingue region straddling the Ontario–Quebec border.

Each case study brings a unique perspective to the report.[2] The M-KMA, for example, is still largely undeveloped and represents the first attempt at legislated landscape-level conservation planning. The Al-Pac region is experiencing extensive resource development pressures from forest, conventional oil and natural gas, and oil sands development. The Abitibi's working landscape has a long history of forest and mining development and falls under the jurisdiction of two provinces. (See Appendix A for profiles of the case study areas.)

The case studies offer important insights into the past, present and future of the boreal. In particular, they provide background on the challenges and opportunities arising from the pressures of multiple uses and resource conflicts and the involvement of multiple jurisdictions. They offer valuable, on-the-ground lessons on the emerging use of innovative planning approaches that could have broader, national application throughout the boreal – including in areas that may not yet be experiencing development pressures.

Multi-stakeholder workshops were held in each of the case study regions as part of the analysis. These workshops allowed the task force to test preliminary findings from the case studies and to gain a better understanding of regional issues, concerns and priorities. (See Appendix B for lists of participants in the three workshops.)

The task force also commissioned several research studies on specific issues and measures arising from the discussions and from a review of relevant international experience (see "Selected Bibliography" for details).

Finally, development of the *State of the Debate* report benefited from a series of consultations with senior representatives of organizations with an interest in the future of the boreal, including officials from the federal, provincial and territorial governments, industry groups, and Aboriginal and civil society organizations. These consultations enabled the task force to explore in detail the feasibility and implications of possible policy measures for advancing conservation in balance with economic development.

1.3 The *State of the Debate* Report

This *State of the Debate* report presents the findings and recommendations of the Boreal Forest Program. It is structured as follows:

- section 2 outlines the ecological, economic and social importance of Canada's boreal, and considers the international and domestic trends affecting its future;
- section 3 identifies opportunities for governance action by governments, industry, Aboriginal and community groups, and civil society organizations under four interrelated policy areas to promote conservation in the boreal in balance with economic development, and summarizes the state of the debate on these key issues; and
- section 4 presents a set of final observations on the findings of the Program.

The state of the debate sections reflect what the NRTEE has heard throughout the Boreal Forest Program, during the dialogue among task force members and during the other consultations. These sections seek to identify areas where there appears to be broad consensus, as well as areas where there continue to be differing perspectives.

The report has been prepared for all those with an interest in the future of Canada's boreal – a wide-ranging group including governments (federal, provincial, territorial, Aboriginal and community); residents of communities in the boreal; resource industries; the tourism industry; and environmental and other interest groups.

In an important sense, however, the report has been prepared for all Canadians. For whether they recognize it or not, they too have an essential interest in the future of the boreal.

STATE OF THE DEBATE REPORT: DEFINITIONS OF KEY TERMS[1]

Conservation
The maintenance or sustainable use of the earth's resources in a manner that maintains ecosystems, their species and genetic diversity, and the evolutionary and other processes that shaped them. Conservation may or may not involve the use of resources; that is, certain areas, species or populations may be excluded from human use as part of an overall landscape/waterscape conservation approach.

Working Landscape
The portion of public (Crown) lands allocated for development (e.g., forest development, mining, oil and gas exploration and development, hydroelectric development and tourism).

Allocated Lands
Those public lands for which resource development rights have been granted to a third party or parties.

Governance
The exercise of authority in pursuit of an objective.

Protected Area
A geographically defined area dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other means.

Boreal Region
The area in Canada composed of the taiga, boreal forest and aspen parklands sub-regions.

Natural Capital
Natural assets in their role of providing natural resource inputs and environmental services for economic production.

Regulatory Policy
The legal, institutional and policy framework for managing land and resource use.

Fiscal Policy
The framework of fiscal measures, including taxation and expenditure programs (e.g., subsidies), of significance to the attainment of sustainable development objectives.

CANADA'S BOREAL TODAY

2

2 CANADA'S BOREAL TODAY

WHAT IS THE ENVIRONMENTAL, ECONOMIC AND SOCIAL IMPORTANCE OF CANADA'S BOREAL? AND WHAT ARE THE MAJOR FACTORS LIKELY TO SHAPE THE FUTURE OF THE REGION? THE FOLLOWING DISCUSSION OFFERS SOME ANSWERS.

2.1 Overview of the Boreal

Globally, the boreal represents earth's most extensive terrestrial ecosystem type. It is the dominant ecosystem of the northernmost land areas on the planet, stretching across Canada, Alaska, Russia, Finland, Sweden, Norway and small portions of China and Japan. (Map 1 illustrates the extent and location of the world's boreal regions.) Its forest area is larger than that of the rainforests of the Amazon and Southeast Asia. Around the world, as in Canada, the boreal performs essential environmental services, as well as supporting resource-based industries and thousands of communities.

Canada has about 30% of the world's boreal regions, more than any other country except Russia.[2] The boreal is Canada's largest ecosystem, with its nearly 6 million km^2 of forests, wetlands and barrens accounting for more than half of the nation's total land area.[3]

Canada's boreal is commonly classified into three distinct sub-regions (see Map 2):

- The *aspen parklands sub-region* lies in the very southern extent of the boreal in portions of the boreal plains ecozones of Alberta, Saskatchewan and Manitoba. The sub-region is characterized by a cover of quaking aspen and balsam poplar, as well as open parklands.

MAP 1: THE WORLD'S BOREAL FOREST

This map was taken from the Atlas of Canada http://atlas.gc.ca

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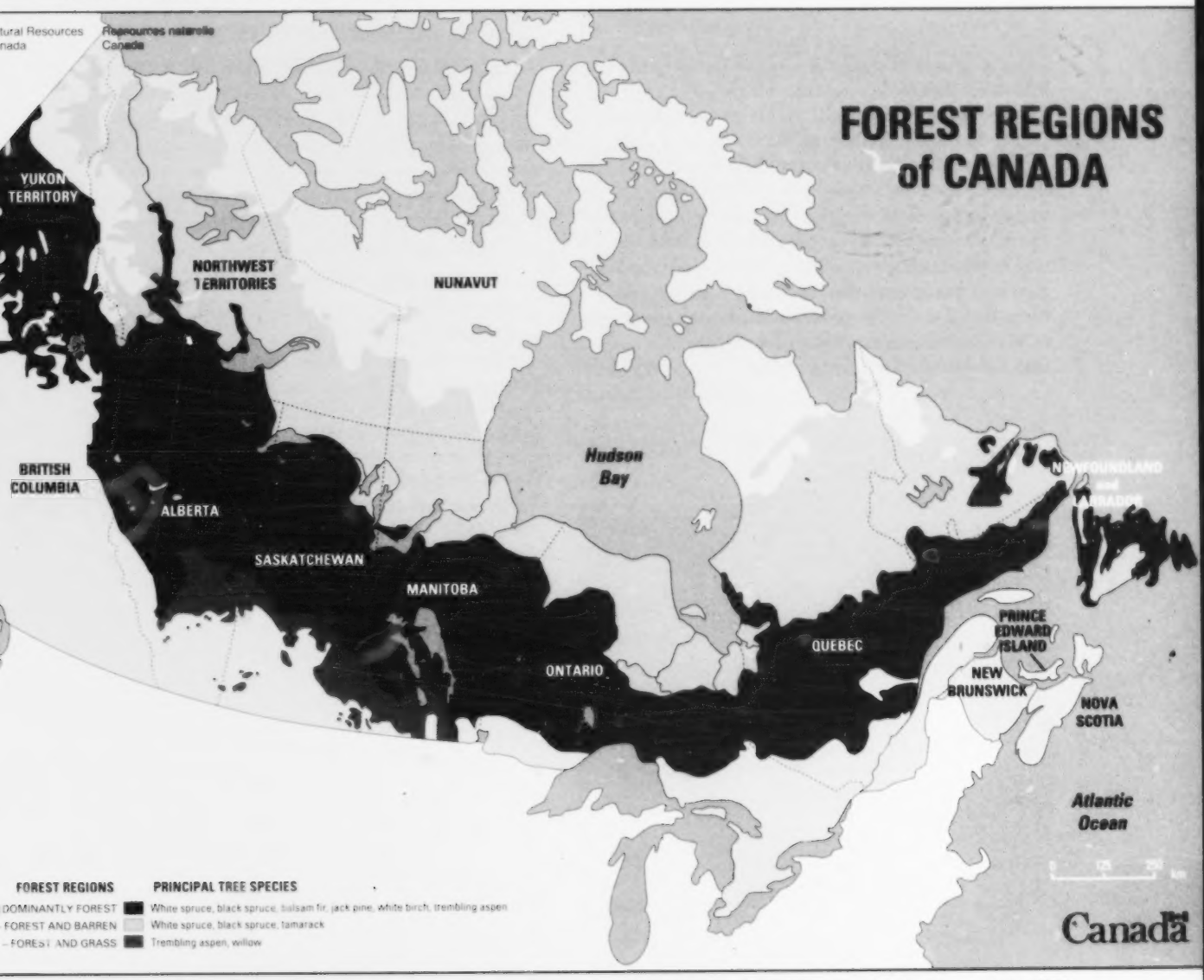
- The *boreal forest sub-region* is the largest of the three boreal sub-regions. It is covered largely by closed-canopy forest and has three distinct ecozones: the boreal plains, boreal shield and boreal cordillera.
- The *taiga sub-region* lies north of the closed-canopy forest and consists of sparse forest and open barrens extending to the northern limit of trees. It is the least developed and allocated part of the boreal.

All three case studies were located in the boreal forest sub-region, where development pressures are currently most evident.

MAP 2: CANADA'S BOREAL SUB-REGIONS



Adapted from the Forest Regions of Canada map with permission of the Canadian Forest Service, Natural Resources Canada, 2005.

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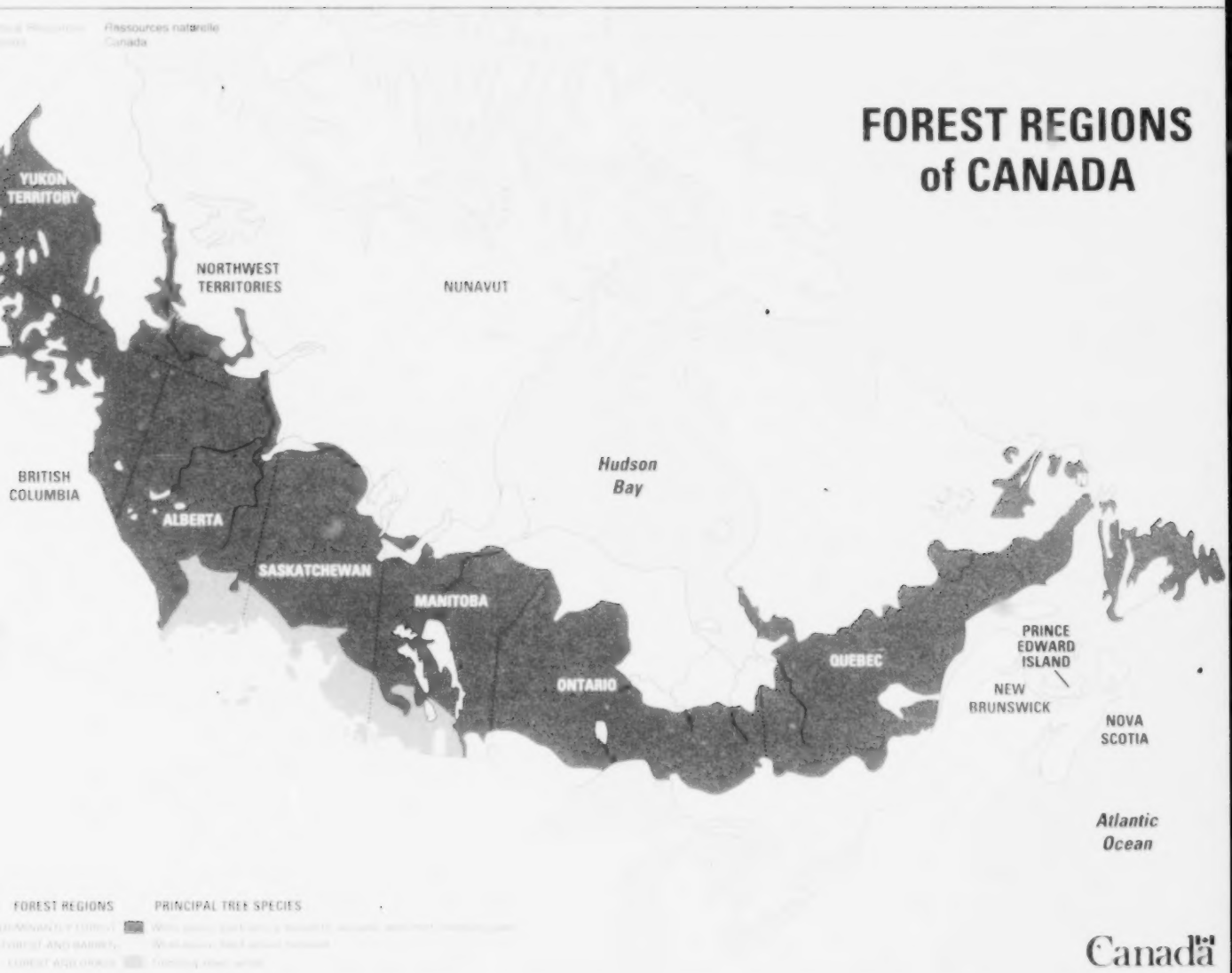

Adapted from the Forest Regions of Canada map with permission of the Canadian Forest Service, Natural Resources Canada, 2005.

CANADA'S INTERNATIONAL STEWARDSHIP ROLE

Canada's extensive boreal territory presents a special responsibility – and opportunity – for this country to be an international steward of the global boreal. There are opportunities for international action and cooperation on several fronts. For example, Canada is party to a number of international conventions and protocols that may affect management of the boreal. These include the United Nations Framework Convention on Climate Change, the Convention on Biological Diversity, the Ramsar Convention on Wetlands of International Importance, the Convention Concerning the Protection of the World Cultural and Natural Heritage, and the Convention on International Trade in Endangered Species of Wild Fauna and Flora.

As well, Canadian governments and industry have built a reputation for scientific, technological and management expertise about the boreal – a reputation that fosters opportunities to share this expertise internationally. For example, Canada has already shared an innovative approach to sustainable forest management through the creation of the International Model Forest Network. The Network, with its secretariat in Canada, now includes model forests in several countries, including Chile, Japan, Mexico and Russia. A new transboundary model forest is being created in the boreal along the Swedish–Norwegian border.

In November 2004, the plenary session of the World Conservation Union, the IUCN, approved a resolution urging Canada and Russia to increase their efforts to "recognize, preserve and protect" boreal processes.

Source: The full text of the IUCN resolution is available at: **www.borealcanada.ca/pdf/CGR3Rec021.pdf**.

THE STATE OF HEALTH OF CANADA'S BOREAL

Many Canadians think of the boreal, if they think of it at all, as a vast, pristine swath of forests in the North. The truth is that much of the boreal is far from untouched by human activities. Forestry operations (logging, sawmills, pulp and paper plants) have been a dominant activity in the southern boreal region for decades or more. Oil and gas exploration and development has increased in recent years in the western boreal. Agriculture is significant along the southern boreal plains and portions of the clay belt in the southern boreal shield. Mining is undertaken across the region, primarily in the boreal shield. Finally, subsistence trapping, fishing and hunting, and tourism and recreation are all common throughout the boreal.

The scale and pace of recent human activity has left its "ecological footprint" in the boreal as land disturbances from agricultural clearing, logging roads, seismic lines, pipeline rights-of-way, working and abandoned mine sites, and hydroelectric dams and reservoirs. Some researchers have expressed concern about the future health of the boreal if these trends in resource development continue.

However, predicting the future on the basis of past trends can be misleading. Past development patterns and practices need not be repeated. For example, significant progress has been made in recent years in reducing impacts from seismic operations through "low impact" technological innovations and changes in industry practices.

Canadians need to think about the future of the boreal – and to recognize the opportunities they have today to affect what occurs in the boreal in the years ahead. The real challenge for Canada's boreal today may be to ensure that the right approaches to public and private governance – institutions, policy measures, capacities and awareness – are in place to help shape a future where conservation and development are in balance, right from the start. In particular, there is an opportunity to apply the lessons learned today to the unallocated areas of the boreal that are still largely undeveloped.

The task will not be easy. Much of the working landscape in the boreal is already allocated to forestry, oil and gas companies. Conflicts have emerged in some areas over resource development plans. The role of Aboriginal peoples is evolving rapidly. And powerful forces, such as global trade policies and climate change, are coming to the fore and affecting the region's future (see "Trends Affecting the Future of the Boreal," below).

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CANADA AND THE GLOBAL BOREAL

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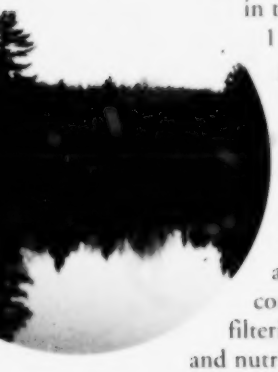
2.2 Why Canada's Boreal Matters

From any perspective – ecological, economic or social – the boreal is important to Canada and Canadians. Conservation can generate significant benefits, both within the boreal region itself and in Canada as a whole.

THE ECOLOGICAL IMPORTANCE OF THE BOREAL

The case for conserving Canada's boreal begins with the important ecological services performed by healthy, complex natural ecosystems such as the boreal: biodiversity preservation, air and water purification, flood control and climate control. These services are important at all geographic scales – locally, nationally and globally.

The world's boreal region has been likened to a giant sponge, consisting of forests and wetlands. Combined, Russia and Canada's boreal regions have the largest area of wetlands in the world, with an estimated 1 to 2 million lakes and ponds in each country.[4] These areas play a major role in maintaining the health of watersheds and river basins, storing and moderating the flow of water between upland areas and lowland ecosystems, and controlling water quality by filtering chemicals, sediments and nutrients.



At a global level, the world's boreal also plays a vital role in the global carbon cycle that regulates the earth's climate. The boreal serves as one of the planet's most important carbon reservoirs – a vast storehouse that prevents atmospheric carbon from being released as carbon dioxide and methane, two greenhouse gases (GHGs) linked to human-caused climate change. Most of the carbon is held within peat deposits, soils, lake sediments and trees.

Boreal ecosystems can act as a carbon *sink* because of the potential for forests (particularly younger trees) to sequester or take up carbon in their above- and below-ground biomass and soils. Given certain climate change scenarios, the boreal also has the potential to become a major *source* of GHGs, as the result of larger and more frequent fires, infestation and tree-kill by pests, and loss of peatlands.

Canada's boreal is home to more than 90% of the country's remaining relatively large, undeveloped areas of forestlands. It supports some of the world's largest remaining populations of woodland caribou, wolves and bear. More than a billion birds migrate north to the boreal to breed after wintering in warmer climates. More than 75% of North America's waterfowl rely on Canada's boreal wetlands and forests at some point in their lives.

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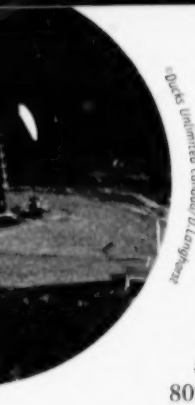
THE ECONOMIC IMPORTANCE OF THE BOREAL[5]

In addition to its role in moderating climate and providing other ecological services of fundamental importance to the economy, the boreal and its resources support some of Canada's major industries. Forest, mineral and energy resources contribute nearly 13% to Canada's gross domestic product, provide more than 900,000 jobs (or about 6% of the national total), and account for nearly 40% of Canada's balance of trade. Much of this resource-based economic activity is generated in Canada's boreal.

Forest Sector

There are about 7,000 forest operations throughout Canada's forests, providing jobs for nearly 400,000 people in wood product and paper manufacturing, logging and forest services.[6] Canada exports about $40 billion a year in wood products and is the world's largest producer and exporter of newsprint. While statistics specific to the boreal are not available for the forest sector, it is estimated that about half of Canada's annual wood harvest comes from the region.



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Mining

Canada is one of the leading mining nations in the world, producing more than 60 minerals and metals. As of 2003, there were about 190 major metal, non-metal and coal mines in the country. About 80% of mining in Canada is undertaken in the boreal.[7]

Oil and Natural Gas

Much of Canada's oil and natural gas resource extraction and virtually all of its oil sands development is undertaken in the boreal. The Western Canada Sedimentary Basin, most of which underlies the boreal forests of northern Alberta, northeastern British Columbia, southeastern Yukon and southwestern Northwest Territories, has much of Canada's oil and gas reserves. As areas of the basin mature, most of the growth opportunity is likely to be in the boreal – the terrestrial frontier for Canada's oil and gas industry. Alberta's oil sands are second only to Saudi Arabia's in global oil reserves.

Hydroelectric Development

Canada is the world's largest producer of hydro-generated electricity, with hydroelectric power accounting for 60% of the country's electricity generation capacity. Manitoba relies on hydroelectric power for 95% of its electricity needs, Quebec 93% and British Columbia 90%. Many of the dams are located in the boreal region. An estimated 279 dams have been built in the boreal shield ecozone, 42% of the total number nationally, and an estimated 85% of drainage basins in that one ecozone have been altered by hydroelectric development.[8] Several provinces have plans to significantly expand generation capacity, partly in response to energy security needs. One proposal, for example, calls for construction of an east–west link in the power grid that would allow for a nearly 10-fold increase in capacity for delivering hydroelectricity from Manitoba to Ontario.

Tourism

Tourism is the world's largest industry. The World Travel and Tourism Council estimates that, globally, travel expenditures will increase to US$2.3 trillion by 2010. In 2001, tourism spending in Canada was C$54.6 billion. Of this, Canadians accounted for 70%. Ecotourism (travel to natural areas that aims to respect the environment and the well-being of local inhabitants) is one of the fastest-growing components of the tourism industry. Hunting and fishing are also multimillion-dollar industries throughout the boreal. Although provincial, territorial and federal governments have not yet targeted the boreal as a specific tourism destination, there is tremendous potential for tourism to become an alternative source of community economic development in the region.

THE SOCIAL IMPORTANCE OF THE BOREAL

Aboriginal Communities

Aboriginal peoples have lived in the boreal for millennia, and it continues to provide them with a means of livelihood and a source of cultural and spiritual sustenance. In many Aboriginal communities, the local economy is a mix of cash income and traditional subsistence harvests. The knowledge of how to harvest and use the resources of the boreal – for everything from food and clothing to medicine and ceremonial materials – forms the basis of the traditional knowledge passed from one generation to the next.

The challenges and opportunities specific to Aboriginal communities in the boreal are outlined in more detail in section 3 of this report, under "Aboriginal Peoples' Engagement."

"R3" Communities

The boreal is home to hundreds of rural, remote and resource-dependent (or "R3") communities. Their existence, in many cases going back decades or more, depends on the forest, mining and energy industries. For example, forestry is the sole industry in nearly 50 northern Ontario communities, and in Quebec an estimated 250 communities in the boreal depend directly on the forest sector. An estimated 80 communities in the boreal rely largely on mining and mining-related industries for their economic survival, supplying about 75% of the country's iron, nickel, copper, gold and silver.[9]

The heavy reliance of communities on natural resources as a source of employment and revenue has created economic challenges in many areas of the boreal. Simple proximity to the forest and other resource extraction industry jobs does not necessarily lead to community sustainability and meaningful participation in the local economy. R3 communities

re remote from services and markets. Moreover, heir economies are resource-based and cyclical, nd therefore are severely impacted by downturns n global commodity prices.

o meet those challenges, rural communities are ransforming and their businesses are diversifying, as hey prepare to play a larger role in today's economy. he ability of resource-based communities to participate n resource and land management decision-making rocesses – as well as in the development of new conomic opportunities that will improve their future – s essential to ensure community sustainability.

s international market pressures and other domestic ressures continue to have an impact on the lives of 3 community members, the diversification of the orthern economy in a manner that will decrease ependency on single industries and natural resources ill become a priority for governments at all levels.

2.3 Key Interests in the Boreal

Many perspectives come into play when looking at he present and future of the boreal. Governments, esource industries, Aboriginal communities, tourism perators, conservation organizations and local ommunities all have an interest in how the boreal orest is managed.

hese groups are interacting more and more as resource evelopment moves farther northward. Disputes over ow land and resources are being allocated and man-ged are appearing more frequently across the boreal, s the views and demands of these different groups ome into conflict. At the same time, there are also many examples in the boreal of mutually agreeable rrangements and best practices based on strong partnerships among key groups.

he following discussion outlines the major participants n boreal issues in Canada. (See Appendix C for a ummary of recent initiatives in Canada related o the boreal.)

GOVERNMENTS: PROVINCIAL, TERRITORIAL, FEDERAL

Provincial Governments

Provincial governments have primary responsibility for natural resource management in the boreal within their respective jurisdictions. Land use planning, resource disposition and the regulation of many activities that affect natural capital are all under provincial control. This includes the regulation of most renewable and non-renewable resources, such as fish and wildlife, minerals, timber and the production of electricity.

Legislation and regulations governing resource development in the boreal vary widely among the provinces and territories. Typically, each province has specific statutes for managing each resource sector, in addition to statutes governing surface use of public lands and waters, regulating pollution emissions and cleanup, and requiring environmental assessments for specified project categories.

Of special importance to the boreal are provincial tenure, licensing and other allocation systems, which specify the nature of legal rights granted by governments to extract or harvest publicly owned minerals and timber, as well as the processes for granting those rights.[10]

Territorial Governments

Responsibility for managing most lands and resources in Yukon was transferred from the federal government to the Yukon territorial government in 2003. In Nunavut and the Northwest Territories, the federal government is responsible for managing non-renewable resources (oil and gas, and minerals), while all three territorial governments are responsible for managing renewable resources. In all three territories, the federal government still plays a role in environmental assessment, land claims negotiations, and conservation planning and wildlife management.

Federal Government

Federal authority over industrial development in the boreal is more indirect than that of provincial governments, yet potentially quite broad in scope. The federal government has the capacity to support initiatives and influence activities through a range of tax and spending measures related to resource development.

Other federal responsibilities that could affect federal action in the boreal include responsibility for:

- protecting fisheries and fish habitat and migratory birds, under the *Fisheries Act* and the *Migratory Birds Convention Act*, respectively;
- regulating toxic substances, under the *Canadian Environmental Protection Act*;
- protecting and managing species at risk, under the *Species at Risk Act*;

- environmental assessment of projects requiring certain regulatory and funding decisions of the federal government, under the *Canadian Environmental Assessment Act*;
- "Indians" and "lands reserved for Indians" and for ensuring that Aboriginal and treaty rights are not infringed upon;
- directly or indirectly regulating energy-related activities in the boreal, including international power lines and pipelines, the export of electric power and oil, and the export and import of natural gas, under the *National Energy Board Act*;
- promoting the sustainable development of Canada's forests and competitiveness of the Canadian forest sector;
- promoting the sustainable development and responsible use of Canada's mineral and metal resources;
- transboundary and navigable waters;
- research; and
- international conventions to which Canada is a signatory, including those on biodiversity conservation and climate change.

Intergovernmental

Federal, provincial and territorial governments also cooperate on a range of resource management issues related to the boreal through ministerial-level councils. For example, the Canadian Council of Forest Ministers (CCFM) was established in 1985 to bring public attention to forest issues, stimulate forest policy development, provide leadership in forest management, and set the overall direction for the sustainable management of Canada's forests. The CCFM has sponsored the development of several national forest strategies and most recently has proposed specific sustainable forest management practices in its Criteria and Indicators Program and Forest 2020 initiative.

ABORIGINAL PEOPLES

The boreal is home to about a million Aboriginal people, including 80% of the more than 600 First Nations in Canada. At the national level, the following organizations are active on issues related to the boreal:

- The *Assembly of First Nations* is the national organization representing First Nations communities in Canada. It presents the views of the various First Nations through their leaders in areas such as Aboriginal and treaty rights, economic development, education, languages and literacy, health, housing, land claims and the environment.

- The *National Aboriginal Forestry Association* is a grassroots initiative backed by First Nations and other Aboriginal groups and organizations that function at either the regional or community level in the area of forestry. It promotes and supports increased Aboriginal involvement in forest management and related commercial opportunities, to build sustainable Aboriginal communities while staying committed to holistic or multiple use forestry.
- The *Canadian Council for Aboriginal Business* works toward the full participation of Aboriginal people in the Canadian economy by brokering business relationships between the corporate sector and the Aboriginal community, and by providing the private sector with the resources it needs to engage Aboriginal people, businesses and communities. The Council has been responsible for the development of the Progressive Aboriginal Relationships program, a business certification program that enables businesses to earn the right to use an identifying hallmark indicating that they are committed to increasing Aboriginal employment, assisting business development, building individual capacity and enhancing community relations.
- The *Canadian Aboriginal Minerals Association* is an Aboriginal, non-profit organization that seeks to work with mineral companies to explore and develop mineral resources to advance Aboriginal community economic development, mineral resource management and environmental protection.

Numerous tribal councils and other Aboriginal organizations, such as the Grand Council of the Cree in Quebec, the Nishnawbe Aski Nation in Ontario and the Union of British Columbia Indian Chiefs, work at the regional and community levels on environmental management and social and economic development initiatives.

ISTRY

f Canada's major resource industries are active e boreal, and all maintain national (and often incial) organizations. These include:

e *Canadian Association of Petroleum Producers* APP) – CAPP represents the upstream oil and s industry in Canada, and its 150 member mpanies produce more than 98% of Canada's tural gas and crude oil;

e *Forest Products Association of Canada* (FPAC) – PAC represents wood, pulp and paper producers, nd its members are responsible for about 75% of e working forests in the country;

e *Mining Association of Canada* (MAC), the ational organization of the Canadian mining ndustry – MAC represents companies engaged n mineral exploration, mining, smelting, refining nd semi-fabrication. Member companies account r the majority of Canada's output of metals and ajor industrial materials; and

he *Canadian Electricity Association* (CEA), the ational forum of the electricity industry in Canada – he CEA represents utility companies accounting or about 95% of Canada's installed generating apacity, as well as major electrical manufacturers nd corporate consulting companies.

ddition to the major resource industries, other ustry groups are active in the boreal, including rism operators, trappers, service industries and t manufacturers.

IL SOCIETY ORGANIZATIONS

ecent years, several civil society organizations have dertaken campaigns to raise awareness among nadians and the international community about ecological importance of the boreal. For example:

The *Canadian Boreal Initiative* (CBI) was established in 2003 to work with other civil society organizations, First Nations, industry and other interested parties to link science, policy and conservation activities in Canada's boreal forest. Recent initiatives include preparing a status report on government conservation activities in the boreal; coordinating development of the Boreal Forest Conservation Framework aimed at conserving the cultural, sustainable economic and natural values of the region; and undertaking public opinion research on Canadians' support for boreal forest conservation.

- *Ducks Unlimited Canada* (DUC) is working with governments, industry, First Nations and other Aboriginal groups, academic institutions, foundations and other conservation organizations to help establish a national boreal conservation network that includes watershed-based approaches to ecosystem-based sustainable development, world-leading best management practices, and an extensive network of large, wetland-rich protected areas.
- The *Canadian Parks and Wilderness Society* (CPAWS) launched a campaign in 2001 to protect Canada's boreal forests from coast to coast. Its goals are to keep intact forests that are in a predominantly wild state and to establish a network of protected areas, with functional, multi-species habitat linkages, for forests that have already been fragmented. Besides its work at the national level, many of CPAWS' individual chapters are working on province-wide or local boreal protection campaigns.

2.4 Trends Affecting the Future of the Boreal

The future of the boreal is likely to be shaped by a complex set of international and domestic trends. Of particular importance are world commodity prices and global market pressures, domestic policy trends, the evolution of Aboriginal and treaty rights, and climate change.

GLOBAL ECONOMIC TRENDS

The future of Canada's boreal will be significantly affected by global economic forces far beyond the region. World commodity prices and trade policies that constrain or promote Canada's resource companies will be of particular importance. Market-driven changes such as consumer-driven initiatives and accountability in corporate disclosure may become increasingly important in the boreal over the next decade, as well.

Competitiveness, Trade Policies and Commodity Prices

Exploration and development of natural resources in the boreal is strongly affected by world commodity prices and trade policies.

In the oil and gas sector, dramatic increases in world oil prices could lead to a relatively rapid expansion in

exploration and development, particularly into new, frontier areas in the boreal beyond current major production areas.

The forest sector's global marketplace is characterized by increasing protectionism in the United States, which buys 80% of Canada's forest product exports, increasing competition from Russia, where annual harvests are expected to double or triple in the next 10 years, and an increase in plantations in Brazil and other countries with a better climate for producing rapid-growing trees.[11]

A recent study of the impact of international trade on the management of Canadian forests concluded that "Canadian forest management has changed significantly" over the past 20 years as domestic legislation and policies "have had to respond to a rapidly changing international regime in which trade and increasingly environmental issues play a greater role."[12] The study found that:

> *[t]he main impact on the Canadian industry to date has been through the impacts in markets created by US trade pressure and increases in regulatory costs resulting from international market pressures to protect the environment. Reduced prices and higher regulatory costs have simply provided the industry with greater incentives to rationalize production further and become even more competitive, although this has come at a high cost in terms of forest communities' sustainability.*[13]

Mining is also highly affected by international pricing and competition. Mining requires both long lead times in planning and major capital investment.[14]

The future of Canada's boreal will be significantly affected by global economic forces far beyond the region.

It takes an average of eight to nine years to discover an economic deposit in Canada, and the cumulative costs associated with each new discovery are about $100 million. Another $75 million and $1.5 billion are then needed to access the deposit and bring it into production. The payback on this investment can be highly uncertain. The earning power of a mine is tied to business conditions, wide swings in metal prices, the economic lifespan of production and the high costs of capitalization. Other competitors to Canadian mining companies can quickly emerge, in former Soviet Union republics and in countries in Central and South America and Southeast Asia.

Corporate Social Responsibility and the Securing of Capital

Large resource companies must compete for scarce capital in the international financial marketplace. Investors may be reluctant to support projects that have a high risk of regulatory delays, opposition from community residents or, in general, unacceptable environmental, social and governance liabilities. An increasingly common perception among investors, institutional and private, is that companies that do a sound job of addressing environmental, social and governance issues in their operations tend to be well-managed companies in general and, therefore, worthy of investment. Governments and securities regulators in Canada, the United States and elsewhere are becoming increasingly focused on how such issues might be relevant to the financial performance of individual companies. Similarly, major international initiatives, such as the Global Reporting Initiative and the Carbon Disclosure Project, are working to:

- identify environmental, social and governance risks faced by corporations that may not have been described in the past;
- devise ways of measuring the performance of corporations in addressing these risks, as well as the potential financial impacts associated with these risks; and
- encourage companies to disclose their actions in relation to such risks.

As a result, companies may be held responsible for reporting on how they approach an increasingly well-defined slate of environmental, social and governance issues, and their performance in this regard may affect their ability to attract investments.[15]

DOMESTIC POLICY TRENDS

The future of the boreal will be affected by broader domestic government policy priorities and trends. Among those policy trends likely to affect current and future approaches to conservation and development in the boreal are the following:

Provincial Policies

Provincial governments have primary jurisdiction over resource development in Canada's boreal. Current and emerging provincial policies toward land use, energy development, renewable resource management and taxation, therefore, will be major factors in determining how conservation and economic development can evolve in the region.

For example,[16] the percentage of provincial lands designated as protected has grown over the last decade in four of the major forested provinces of Canada: British Columbia, Alberta, Ontario and Quebec. All provinces either have or are developing specific policies around protected areas. Saskatchewan, Ontario and several other provinces have developed biodiversity strategies.

As indicated in the case studies, provinces are also experimenting with new planning processes, such as the M-KMA approach, that incorporate environmental objectives.

Other provinces have reviewed resource development practices with a view toward better balancing conservation and development values. For example, Quebec recently undertook a major independent public review of forest management. Many of its findings and recommendations are directly relevant to the boreal region (see box). Similarly, the Government of British Columbia is moving toward results-based regulatory frameworks in the forestry sector, in keeping with the smart regulation approach.

"Smart Regulation"

The Government of Canada has signalled its intention to develop a renewed regulatory strategy – known as "smart regulation" – that protects the health and safety of Canadians and the environment, while contributing to innovation and competitiveness. In its 2004 report to the government, an independent advisory group identified several immediate opportunities for regulatory reform in the federal system that could have implications for the boreal:[17]

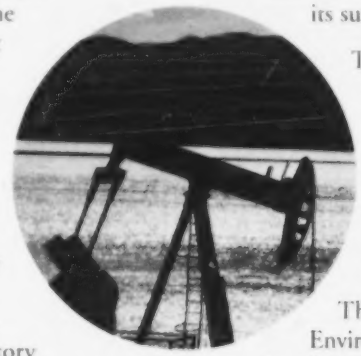
- *The environmental assessment process:* To address significant coordination challenges in this area, the federal government should establish a single environmental assessment agency to carry out assessments under federal jurisdiction, and begin discussions with provincial and territorial governments to develop a national integrated environmental assessment process for Canada.

QUEBEC'S PUBLIC REVIEW OF FOREST MANAGEMENT

The Commission for the study of public forest management in Quebec (known as the Coulombe Commission) focused on the economic, environmental, social and regional aspects of Quebec's forests. In its December 2004 report, the Commission proposed that:

- **the province reduce allowable cutting levels by 20%, in response to what it found was past over-harvesting;**
- **a new position of chief forester be established to oversee forest management activities in the province;**
- **Quebec move away from managing forests primarily for wood production and focus instead on ecosystem-based management, recognizing multiple users and benefits;**
- **12% of the province's boreal forest be protected;**
- **all public forest management units in the province be certified or engaged in a certification process "to an internationally recognized standard" by the year 2007; and**
- **the province support certification efforts by eliminating the co-management of lands by a multitude of licence holders in order to give responsibility for planning and management to one single entity.**

- *Regulating oil and gas exploration and development:* The federal government should create a broader, long-term regulatory cooperation framework among northern regulators that offers timeliness, transparency, predictability, clarity and certainty. A single-window approach should be implemented to coordinate federal regulatory involvement in the North, and a federal coordinator with clear decision-making authority should be appointed to ensure the efficient regulation of the Mackenzie Gas Pipeline. Finally, the federal government should support capacity-building initiatives for northern regulators.



- *Enabling First Nations economic development:* The federal government should move quickly to create an efficient, more responsive regulatory environment in First Nations communities. The government should accelerate its agenda to modernize the regulatory regime in First Nations communities and address regulatory gaps that inhibit the development of commercial and industrial projects on reserve land. The government should reduce the regulatory and administrative burden on First Nations communities and establish a centralized process for coordinating regulatory activity. In addition, the government should accelerate the development of initiatives to improve First Nations skills and capacity to make rules and manage regulations.

The reforms under "smart regulation" could serve to improve intergovernmental coordination and streamline regulatory approvals for major resource companies operating in the boreal, thus encouraging development. At the same time, the reforms could strengthen the capacity of First Nations, territorial regulators and others to make and manage effective regulations affecting the boreal.

Ecological Fiscal Reform

A number of governments around the world are exploring the innovative use of fiscal measures to encourage actions in support of sustainable development objectives. This approach, known as ecological fiscal reform (EFR) or "green" budgeting, uses policy tools such as taxation measures, tradable emissions permits, direct spending and program spending to influence the behaviour of industries and individuals. EFR could be a flexible and effective means of encouraging conservation activity in the boreal by resource companies. However, it is not yet clear whether Canada will pursue EFR in any systematic way. Over the past decade, several countries from the Organisation for Economic Co-operation and Development (OECD) have expanded the use of such tools to address environmental issues. The OECD, however, has reported that Canada uses them less than most other OECD countries to achieve its sustainable development goals.[18]

The NRTEE has contributed to the dialogue on EFR in Canada with a major national *State of the Debate* report. That report concluded that EFR faces "an uphill struggle" in Canada but is "uniquely appropriate" for addressing sustainable development objectives.[19]

The federal Commissioner of the Environment and Sustainable Development has also encouraged greater use of EFR. In a 2004 report, the Commissioner noted that the "tax system, by influencing the actions of Canadians, can have important direct and indirect impacts on the environment and sustainable development."[20] However, the Commissioner also found that the federal Department of Finance has been reluctant to undertake EFR in a comprehensive manner.

In its 2005 budget, the Government of Canada did state its interest in applying economic instruments for achieving environmental goals in an efficient manner, and included several tax measures to save energy and encourage renewable energy use. The Prime Minister also recently asked the NRTEE to work with the Department of Finance on specific EFR measures related to climate change.

Innovation Agenda

In 2002, the federal government launched a 10-year innovation strategy that aims to move Canada to the front ranks of the world's most innovative countries. The government is committed to working with provincial and territorial jurisdictions, industry, universities, communities and citizens to ensure that Canada becomes a world leader in the following areas: developing and applying innovative technologies for economic growth, creating and commercializing new knowledge, promoting continuous learning, training

skilled workers, ensuring a strong and competitive business environment, and strengthening the "social economy" of Canadians in all regions.

The innovation agenda has potential to improve the productivity of Canada's major resource industries, many of which are active in the boreal. There is also potential for long-term changes at the community and small and medium-sized enterprise levels. Initiatives to date under the innovation agenda, for example, have provided high-speed Internet access (known as broadband) to schools and to communities and Aboriginal people in rural and remote areas. Broadband technology can help businesses in boreal communities that face higher marketing and transportation costs or have difficulty in attracting and keeping skilled workers. Access to broadband can also enable Aboriginal communities to improve their access to health care, education and government services, as well as offer new opportunities for economic development.

Climate Change Agenda

In April 2005, the federal government released its plan for meeting Canada's commitments under the Kyoto Protocol. *Project Green, Moving Forward on Climate Change, a Plan for Honouring Our Kyoto Commitment* lays out program and policy measures that have the potential for "transforming the Canadian economy, boosting economic competitiveness and enabling Canada to achieve its short term and long term climate change goals ...[while enhancing] biodiversity, [preserving] wild spaces and generally improving the quality of life for Canadians."

Project Green is built on six key areas: competitive and sustainable industries, harnessing market forces, a partnership among Canada's governments, engaged citizens, sustainable agriculture and forest sectors, and sustainable cities and communities.

Canada has committed to moving toward a lower-carbon economy, a trend that could have significant effects on the management of the boreal.

ABORIGINAL INVOLVEMENT

The involvement of Aboriginal peoples in development will be an important factor in the future of the boreal. To date, Aboriginal peoples have been largely excluded from resource allocation planning and decision making in the boreal. At the same time, a number of Aboriginal communities are seeking to become active participants in resource development.

Not only do Aboriginal people wish to be hired and trained in order to make up a greater portion of the natural resource industry–related workforce, but they are also pursuing co-management and partnership agreements and, at least in forestry, are increasingly pursuing their own tenure agreements and regimes.

The Government of Canada has recognized the inherent right of self-government as an existing Aboriginal right under section 35 of the *Constitution Act, 1982*. The Aboriginal peoples of Canada have the recognized right to govern themselves in relation to matters that are integral to their unique cultures, identities, traditions, languages and institutions, and with respect to their special relationship to their land and resources. Starting in 1975 with the James Bay and Northern Quebec Agreement, modern land claims settlements continue to be negotiated between Aboriginal peoples and the federal, provincial and territorial governments in parts of the boreal. Modern land claims settlements differ from historic treaties in several key ways: they reserve large areas of lands for Aboriginal signatories, they institutionalize co-management of land and resources through the region covered by the agreements, and they provide substantial financial settlements for the Aboriginal signatories.

Under Canadian law, the Crown also has a fiduciary obligation with respect to Aboriginal peoples. The Supreme Court has clarified that this obligation carries with it a "duty to consult" with Aboriginal peoples, notably in the context of resource development and potential infringement of constitutionally protected rights. Recent court decisions have determined that management activities that curtail traditional Aboriginal activities impede existing Aboriginal and treaty rights, and that resource companies must exercise due diligence in order to ensure that these rights are not infringed.[21]

CLIMATE CHANGE

Scientists generally agree that there is a discernible human influence on global climate due to the emission of GHGs from the burning of fossil fuels. Increased atmospheric concentrations of carbon dioxide and other GHGs are predicted to result in substantial changes in global climate in the 21st century. Although there always will be scientific uncertainty about the pace and regional variation of climate change, it seems likely that the combined effects of climate change could result in serious impacts on the future of boreal ecosystems and communities.

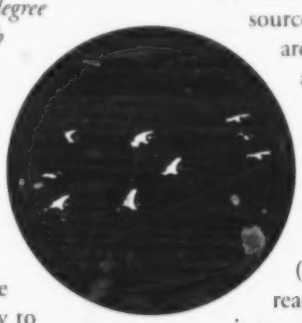
Indeed, the world's boreal forests may be impacted by climate change more than many other regions. Global warming is expected to be greatest at the most northern latitudes. Boreal forests in Canada and other countries could decline in response to such factors as increased incidences of diseases, pest infestations, fires, invasive species, severe weather events, reduced rainfall and other stressors. As a result of this warming, impacts will be seen at both local and regional spatial scales and over both short- and longer-term horizons.

Major impacts on the boreal ecosystem are likely to be seen in the following areas:

- *Shifting vegetation zones:* As climate conditions change, the geographic ranges of some boreal species could shift north by as much as 300 to 500 km over the course of the next century. The pace and distribution of such changes are highly uncertain. For example, changes in the rate and timing of seed production could limit the rate of migration. As well, soil and moisture conditions in more northerly areas may not favour forest growth.[22]

- *Natural disturbances:* Under current climate change projections, the frequency of fire and insect outbreaks in Canada's forests is expected to increase in many areas. Although climate warming may be the underlying cause of the potential shift of forest ecosystem boundaries,

  > *... fire is the disturbance mechanism that is expected to bring about the changes. Warmer and drier conditions are expected to increase the frequency, duration and intensity of fires. Climate change will affect the distribution and degree of infestation of insect pests both through direct effects on the life cycle of insects and indirectly through climatic effects on host, predators, competitors, and insect pathogens. The risk of loss will also increase due to the expansion of insect ranges.*[23]



- *Biodiversity:* Depending on the response of different species to climate warming and in particular their ability to migrate to new habitat, climate change has the potential to result in serious losses in biodiversity. Global warming "is likely to have a winnowing effect on the ecosystems within ecoregions, filtering out species that are not highly mobile and favouring a less diverse, more 'weedy' vegetation and ecosystem that are dominated by pioneer species, invasive species, and others with high dispersal capabilities."[24]

- *Water availability and aquatic environments:* Climate change will likely lead to changes in precipitation patterns, including periods of both drought and intense runoffs. Water tables could drop and wetlands and other aquatic environments could be adversely affected. Hydro-generation could be impacted by reduced annual runoff volumes.

- *Carbon storage:* Canada's boreal region may even shift from a globally significant sink for carbon from the atmosphere to a globally significant source of carbon, as large amounts of carbon are released by oxidation of peatlands and as the frequency and intensity of fires and other factors increase.

Changes in climate could also lead to other human-induced impacts in the boreal, such as the further conversion of forests in the boreal transition zone (the aspen parklands and southerly reaches of the boreal forest sub-region) into agricultural uses.

Deforestation for the purpose of agriculture has already had an important historical impact in this transition zone, though habitat alteration and fragmentation in the zone have not been widely studied

by the scientific and conservation community.[25] It is known that the forests of the transition zone generally support a much larger array of biodiversity than forests in other regions of the boreal.[26] Transition zone bird communities, for example, are among the most diverse in North America.[27] However, the extent of the forested area of the transition zone has been in decline for some time. Across the boreal plains as a whole, for example, deforestation rates ranged from 0.87% to 1.76% per year between 1966 and 1994, with the major part of this deforestation occurring in the transition zone, as the result of agriculture.[28] Risk of deforestation due to agricultural conversion in the boreal plains ecozone has been estimated at 25% in Alberta, 31% in Saskatchewan and 48% in Manitoba.[29]

In relation to climate change, permanent conversion of forestlands to agriculture may have a profound impact on carbon balances. As a result, limiting deforestation of the transition zone may be one of the least expensive options for reducing the effects of climate change.[30] Policies promoting reforestation of marginal agricultural lands might therefore support other programs designed to mitigate the effects of increased carbon dioxide in the atmosphere, as forests sequester between 20 and 100 times more carbon than agricultural crops and secure carbon for longer periods.[31]

Some researchers have concluded that federal and provincial government programs intended to protect farmers against production loss and price fluctuations appear to have led inadvertently to the conversion of forested lands to marginal cropland.[32] Yet the incentive to convert forestland to agricultural uses might only increase in response to the progressive warming of the climate (and hence better growing conditions) predicted for the region.[33]

2.5 State of the Debate: The Boreal Today

In reflecting on the boreal's current status in Canada, the NRTEE heard two clear issues during the deliberations of the Boreal Forest Program task force and during consultations with government, industry, community, Aboriginal and civil society leaders. First, national and international players have publicly expressed concern about the sustainability of the Canadian boreal ecosystem and, second, it is equally important to address the sustainability of human communities within the boreal.

NATIONAL AND INTERNATIONAL ATTENTION

It is significant that the boreal has received considerable attention in recent years, both within Canada and worldwide – enough to cause decision makers to pause and re-examine some of their economic, environmental and social policies within the context of the boreal's future.

A number of major civil society organizations in Canada have launched campaigns for the boreal, targeted at industry and governments, expressing a general feeling that efforts to date to conserve the boreal have been insufficient. These groups have drawn attention to the boreal's key ecological functions, such as helping regulate the planet's climate and preserving biodiversity in large, relatively undeveloped ecosystems. They have also emphasized the importance of settling Aboriginal land claims as a prerequisite for future resource development in the region.

Partly as a result of these campaigns, people and governments outside Canada have demonstrated that they are ready to hold Canadian governments and resource sectors accountable for sustainable use of the boreal. International vigilance over the management of the boreal in Canada has been evident in actions such as consumer boycott campaigns.

Recent pressure has also come from the Commission on Environmental Cooperation, a governing body under the North American Free Trade Agreement, which conducted an investigation into allegations of insufficient enforcement of the Canadian *Migratory Birds Convention Act*.

At the same time, the NRTEE also heard from certain senior representatives of provincial and territorial governments and industry associations that the future of the boreal may not be as serious a problem as some campaigns make out. These groups believe that the environmental practices of resource industries operating in the boreal are improving and that, on the whole, most forest, energy and mining companies active in the region are acting responsibly and in close cooperation with communities and Aboriginal groups. They believe that the national and international attention on the boreal is unwarranted – and even intrusive – and not in the best interest of Canadians.

Several organizations, including the Canadian Boreal Initiative, are seeking to build common ground in the debate over the boreal's future. In this effort, these groups describe the boreal region as being an opportunity to both conserve key areas while implementing innovative economic and social practices on the ground. To be successful, such approaches will require participation from all parties with an interest in the boreal.

R3 COMMUNITIES

Throughout the dialogue and consultations, the NRTEE heard that the *State of the Debate* report must frame the debate about the boreal in a larger context: the debate about the region's future must be expanded beyond the natural components of the ecosystem to embrace the broader economic, social and environmental context of the people and communities of the region.

In particular, there was debate throughout the work of the task force and the NRTEE consultations as to how the Boreal Forest Program should address the issues of rural, remote and resource-dependent communities in the boreal.

R3 communities are experiencing increased uncertainty given the market pressures on natural resources internationally and domestically, and the major impacts – ongoing and expected – of climate change. Within this context a larger question emerges: How can Canada act in an environmentally responsible and economically viable way so that communities and people in the boreal are able to survive and thrive?

It is clear that there are commonalities between Aboriginal communities and R3 communities, particularly in northern regions. Both share the sometimes harsh economic realities of the North, as well as many

The debate about the region's future must be expanded beyond the natural components of the ecosystem to embrace the broader economic, social and environmental context of the people and communities of the region.

of the socio-economic issues that come from a lack of meaningful employment, job uncertainty or a lack of technical skills to contribute to the regional market. However, it was strongly felt by most task force members and federal and provincial officials with whom the NRTEE consulted that Aboriginal issues need to be dealt with separately, given Aboriginal peoples' constitutionally recognized and affirmed rights and relationships with their lands.

The Boreal Forest Program did not have the time or resources to address the fundamental question of R3 communities in the comprehensive manner it requires. Nevertheless, the question must be put forward for decision makers to keep in mind as they consider the boreal. For example: What role can and should resource companies operating in the boreal play in encouraging the economic diversification and viability of boreal communities? What sources are there for the investments of capital needed for such diversification?[34]

CONSERVATION
ND DEVELOPMENT
IN THE BOREAL:

Opportunities for Governance Actions

3

3 CONSERVATION AND DEVELOPMENT IN THE BOREAL: OPPORTUNITIES FOR GOVERNANCE ACTIONS

THE FUTURE OF CANADA'S BOREAL IS OF PROFOUND SOCIAL, ECONOMIC AND ECOLOGICAL IMPORTANCE TO CANADIANS. A WIDE RANGE OF GLOBAL AND DOMESTIC FORCES IS SHAPING ITS FUTURE. AT THE SAME TIME, GOVERNMENTS, INDUSTRIES, COMMUNITIES, CIVIL SOCIETY GROUPS AND ABORIGINAL PEOPLES IN CANADA HAVE ALREADY PUT IN PLACE INNOVATIVE AND EFFECTIVE PROGRAMS AND APPROACHES THAT ARE HELPING CONSERVE THE BOREAL ENVIRONMENT WHILE PROMOTING ECONOMIC AND SOCIAL DEVELOPMENT. THESE EXPERIENCES HAVE DEMONSTRATED THAT CONSERVATION AND DEVELOPMENT IN THE BOREAL ARE NOT INCOMPATIBLE GOALS. THEY CAN STAND AS "BEST PRACTICES" TO GUIDE OTHER PARTICIPANTS IN OTHER AREAS OF THE BOREAL.

In reviewing past experiences on the working landscape of Canada's boreal, as well as key global and domestic policy trends, the NRTEE concludes that there are opportunities for advancing conservation in balance with development in the boreal through initiatives in four interrelated areas of governance:

- *leadership, education and information* to support sound decision making in the boreal and to raise awareness among decision makers and Canadians of the boreal's importance;
- *ecological fiscal reform* to encourage conservation by industry and others active in the boreal, through economic instruments;
- *innovations in planning and regulatory frameworks* to promote greater coordination within and across jurisdictions and better integration of multiple objectives; and
- *institution and capacity building* to enable the meaningful participation of Aboriginal peoples in decisions affecting their future.

The discussion under each area is organized into four parts. Each begins with a brief summary of the problems or challenges that need to be addressed. Next, the NRTEE proposes a set of desired results or outcomes in response to these challenges. Specific opportunities for governance action in support of these results are then proposed, with supporting analysis. Finally, each section highlights the state of the debate in that particular area, summarizing areas of consensus and divergence that emerged during task force discussions and during the NRTEE's broader consultations.

The future of Canada's boreal is of profound social, economic and ecological importance to Canadians.

In evaluating the feasibility of possible policy measures under each area, the task force considered the following factors:

- the efficiency of the measure in improving the use of existing resources to achieve conservation objectives;
- the scale of likely conservation impact (i.e., magnitude, certainty, visibility and timing);
- the extent to which the measure addresses a specific market, policy or institutional failure;[1]
- the probable overall social acceptability;
- the distributional effects (i.e., who pays and who receives the benefits);
- the potential synergy with existing measures;
- the ease of implementation and cost-effectiveness; and
- flexibility (i.e., the measure's applicability in a variety of settings).

Recommendations for governance actions are directed not only at the federal government, but also at provincial, territorial and Aboriginal governments, industry, communities and civil society organizations. All these parties have a clear interest in the future of the boreal.

It is important to note that the boreal forest is not located in every province or territory in Canada. Where a specific recommendation is directed to provincial and territorial governments, there is an understanding that this refers to provinces and territories with a responsibility over part of the boreal region. At the same time, the jurisdictions that do not have part of the boreal within their borders may still find some of the recommendations useful when addressing the broader challenges of comprehensive land use planning.

3.1 Leadership, Education and Information

CHALLENGES

National and International Leadership

Leadership is the foundation of sound governance. Leadership is needed to establish a clear vision or direction on a question, and to build the consensus and partnerships needed to translate objectives into action.

Until very recently, there has been limited interest among political leaders in federal, provincial and territorial governments (or among industry leaders) in developing a shared national vision for the future of the boreal. Nor has there been much apparent interest in seeing Canada take on a leadership role internationally, in drawing attention to the global importance of the boreal or sharing best management practices with other countries.

The reason may be simple geography – all but three provinces and one territory have part of the boreal region within their boundaries, and each government has its own set of priorities. But the root causes of the limited attention may be much more complex: the boreal is Canada's largest ecosystem and the source of much of its energy supply, resource wealth and exports. It is home to many interests – economic, environmental and social – but is far from the centres of population and political and corporate power. Because of these many pieces of the puzzle, the whole picture can sometimes be overlooked. For example, the future of the boreal will be directly affected by how governments proceed on two of the most important current public policy challenges: climate change and the implementation of Aboriginal rights. Yet the debate and dialogue on such questions are rarely framed in the context of the boreal itself.

Information Challenges

Timely and relevant information is needed to support leadership, inform effective regulatory and fiscal measures, and build capacity. The Boreal Forest Program identified several important challenges related to the generation and use of information on the boreal.

Information Gaps

Significant gaps exist in the scientific knowledge base needed for land use planning and management in the boreal. The gaps are particularly evident in the unallocated portions of the boreal. Although the CCFM and other organizations are in the process of consolidating data, key datasets needed for management decisions are still incomplete or non-existent. Of particular concern is the lack of a current and accurate inventory of the land base and associated biodiversity data.[2]

The case studies identified specific concerns in this area. For example, representatives from governments, industry and community organizations in the M-KMA case study region raised concerns about:

- limited baseline data for the region against which to base longer-term decisions and measure the progress of current conservation measures;
- poor understanding of cause–effect relationships between human activities and ecological responses; and
- the high costs of collecting data and monitoring changes in remote areas such as the M-KMA.

Similar concerns were identified in the Al-Pac case study region, along with other areas of scientific uncertainty. These include the impacts of development on certain elements of natural capital and the appropriate corresponding thresholds or targets for land use, the effects of forest fragmentation on certain species, and the role of fire in natural disturbance regimes.

Other important gaps include:

- *Ecosystem change:* There currently are no measures in place to broadly track and measure the overall cumulative footprint of industrial development in the boreal (e.g., from cutblocks, roads, mines, seismic lines, pipelines, well sites, dams and hydro rights of way). This limits the ability to plan and monitor the status of conservation in the region.[3]

- *Climate change impacts:* The long-term effects of climate change in the boreal introduce another important level of scientific uncertainty, complicating the task of making information available to government, industry and community planners and decision makers. Climate change could modify fire regimes, forest growth and succession, water quality and water flow regimes. However, the effects cannot yet be determined with any precision at a local or area level. A related concern is the lack of reliable baseline data against which to measure future changes.
- *Valuing natural capital:* Data on the economic value of non-timber forest products and ecosystem services are also scarce. Conventional national-level indicators and information systems (such as gross domestic product), which are designed to gauge economic well-being and support broad policy decisions, can provide only a partial view of the complex factors that affect development and societal well-being. They do not account for the natural capital services that are necessary to sustain a healthy economy and society, such as clean water, healthy forests and climate regulation. There are few tools available to enable governments to assign a true value to natural capital. As a result, the boreal's ecological services at regional, national and global scales are generally ignored or undervalued in planning and management decisions.[4]

Data Incompatibility

Where data are available, compatibility among datasets may prove to be a major challenge, inhibiting their application in planning and management. There are three elements of data compatibility or coherence:[5]

- *vertical coherence* occurs when the most detailed data in the system are linked with the most highly aggregated data by clear and transparent aggregation rules, providing an opportunity to "drill down" into an issue;
- *horizontal coherence* refers to the capacity for data within a system to be aligned across environmental, economic and social categories through the use of common data concepts, sources and methods; and
- *temporal coherence* means that data for one time period are directly comparable with those for another.

Difficulties with all three types of compatibility pose challenges for the planning and management of the boreal.

Analytical Capacity

Another challenge with respect to information is the lack of organizational capacity for analytical work using existing datasets. Even if the data are available, many government resource management agencies, resource companies and other groups may not have the resources, time or ability to take datasets and analyze and interpret them to produce information in support of management decisions.

Public Availability of Data

The public availability of data can be important for making decision makers accountable for their choices, for enabling non-government experts to contribute to resource management debates and for supporting research. However, at present many datasets are available only in summary form. For example, while summary information is available on the National Forestry Database Program website, non-government researchers have found it difficult to obtain the actual forest inventory data.[6]

Other data on the boreal collected by government departments, resource companies, academic researchers, Aboriginal groups and civil society organizations are often not readily shared or accessible. Different government departments, for example, require the submission of extensive information for project applications, but often lack the capacity to consolidate and disseminate this information for use by other stakeholders. In addition, resource companies are understandably reluctant to share the proprietary information they have gathered for fear that could reveal their business plans to their competitors and undermine their competitive position.

Traditional Knowledge

A further information challenge is the need to better integrate traditional knowledge of the boreal into planning and decision-making processes.

Traditional knowledge is generally considered to be a "body of knowledge built up by a group of people through generations of living in close contact with nature … It builds upon the historic experiences of a people and adapts to social, economic, environmental, spiritual and political change."[7]

Such knowledge can be an important source of information for governments, communities, resource companies and others in planning projects, undertaking environmental assessments and long-term land use planning. It can serve as a complement to conventional scientific research and data.

However, there are a number of challenges to the use of traditional knowledge. There are few formal requirements, for example, to apply traditional knowledge in government land use planning and environmental management legislation and regulations.[8] There have also been difficulties in the past in reconciling traditional ecological knowledge with the results of scientific studies.

Yet progress is being made. A good example of how traditional knowledge is being incorporated into conservation at the federal level is through the *Species at Risk Act*. Under the Act, an Aboriginal Traditional Knowledge Subcommittee, of the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), was established to formalize a process whereby traditional knowledge could be incorporated and shared to provide for more abundant species information. The subcommittee consists of a national network of traditional knowledge holders and elders who work with COSEWIC to coordinate and share information on assessing and classifying species at risk.

Uncertainty About Climate Change Impacts in the Boreal

Climate change presents one of the basic challenges to the long-term economic, environmental and social stability of the boreal. Scientists generally agree that climate change could have far-reaching implications for the industries and communities of the boreal. However, considerable uncertainty remains about the scale and pace of that change. As a result, adaptation and flexibility may emerge as significant challenges

Climate change presents one of the basic challenges to the long-term economic, environmental and social stability of the boreal.

to governments as well as individual companies and communities in the region. The need for adaptation and flexibility will put a premium, therefore, on leadership, education and information in the boreal in the years ahead.

One recent study undertaken by Natural Resources Canada concluded that the biophysical impacts of climate change on forests could translate into many different social and economic impacts affecting forest companies, landowners, consumers, governments and the tourism industry.[9] Table 1 summarizes the possible biophysical and associated socio-economic impacts.

The Natural Resources Canada study concluded that the magnitude of socio-economic impacts, such as those listed in Table 1, will depend on:

- the nature and rate of climate change;
- the response of forest ecosystems;

TABLE 1: EXAMPLES OF THE SOCIO-ECONOMIC IMPACTS OF CLIMATE CHANGE IN CANADA

BIOPHYSICAL IMPACT	SOCIO-ECONOMIC IMPACT
Changes in forest productivity	Changes in timber supply and rent value
Increased atmospheric greenhouse gases	Introduction of carbon mitigation policies (credits or permits) that create a carbon sequestration market
Increased disturbances	Loss of forest stock and non-market goods
Northward shift of ecozones	Change in land values and land use options
Change in climate and ecosystems	Economic restructuring leading to social and individual stress and other social pathologies
Ecosystem and specialist species changes	Changes in non-market values
Ecosystem changes	Dislocation of parks and natural areas, increased land use conflicts

Source: Natural Resources Canada, *Climate Change Impacts and Adaptation: A Canadian Perspective* (2004).

- the sensitivity of communities to the impacts of climate change and also to mitigation policies introduced to address climate change;
- the economic characteristics of the affected communities; and
- the adaptive capacity of the affected group.

Changes in ecosystem productivity resulting from climate change in turn may require economic restructuring and adaptation. At particular risk are residents of economically undiversified rural communities that rely on the forest sector and hydroelectric generation for their livelihood. "Rapid restructuring of economic systems can lead to social stress or social dysfunction (especially for human settlements that are relatively immobile or where there is a strong sense of attachment to place)."[10]

As well, climate change impacts on Canada's forests could disproportionately affect First Nations, because more than 90% of reserves are located on forested lands and forests play a vital economic and cultural role for many First Nations communities. "The projected impacts of climate change on forests, particularly with respect to increased disturbances and species migrations, could threaten the sustainability of some of these communities."[11]

However, given the uncertainty regarding the magnitude and even the direction of many of these impacts, it is extremely difficult to assess Canada's future competitive ability in international markets:

> *If Canadian forests were to experience faster tree growth and greater wood supply and global timber shortages occur as predicted, due to population and economic growth, Canada's forest industry could benefit. Climate change may require changes in international trade policies and the pricing of forest products, which are generally based, at present, on the assumption of a stable climate.*[12]

RESULTS FOR THE BOREAL

The NRTEE believes that in responding to these challenges, Canadian governments should work toward the following results for the boreal:

Canadians understand the environmental, social and economic importance of the boreal, both in Canada and internationally, and share a vision for its future.

Canada is an international leader in promoting sound conservation of the world's boreal regions in balance with economic and social development.

Information about the boreal is timely, relevant and easily available to government, corporate, community and other decision makers.

OPPORTUNITIES FOR ACTION

The NRTEE proposes the following three measures in support of the desired results in the area of leadership, education and information:

1. Convene a National Leaders' Conference on the Future of Canada's Boreal

Recommendation:

The federal government should serve as a catalyst for developing a shared, national vision of the future of the boreal by convening in 2006 a national leaders' conference bringing together leaders from all jurisdictions and sectors, chaired by the Prime Minister, on the future of Canada's boreal. The leaders' conference would communicate to Canadians that the future of the boreal is a shared national responsibility, develop a consensus on the future direction of the boreal, and identify the role Canada should play internationally in promoting the interests of the world's boreal region.

Leadership requires a reaching across of boundaries to other interests and perspectives, to understand common concerns and differing priorities, and to build a consensus for action where possible. It also means reaching inward, to generate a dialogue within one's own constituency or membership, to find new opportunities for advancing the group's interests within a broader context.

In recent years, a number of civil society organizations and national industry associations have been working to raise awareness of the importance of the boreal and the need for cooperative approaches. The time appears right for taking advantage of this momentum at a national level, with national leaders. The boreal is a dominant feature of Canada's

The boreal is a dominant feature of Canada's geographic landscape; there is now a need to put the future of the boreal on Canada's political landscape.

eographic landscape; there is now a need to put the uture of the boreal on Canada's *political* landscape. eadership is needed on all fronts – not only by ederal, provincial and territorial governments, ut by all organizations with an interest in the oreal's future: industry, Aboriginal organizations, ommunities and civil society groups.

o reflect the magnitude of the challenge, it is proposed hat the Prime Minister convene and chair a conference f Canada's most senior leaders: first ministers, boriginal leaders, national business and civil society eaders, and leaders of communities in the boreal.

he leaders' conference is a means to an end. hrough the leadership of the Prime Minister, the onference would serve as a catalyst for raising the rofile among Canadians of the boreal's future. It ould communicate to Canadians that the future of he boreal is a shared national responsibility, encom- assing economic, social and environmental goals.

articipating leaders could develop a consensus on he future direction of the boreal – a shared vision nd priorities. In particular, participants could come o agreement in the following areas:

- appropriate roles for various governments in the boreal;
- firm commitments to coordinate programs across jurisdictions and sectors; and
- a boreal policy framework.

he leaders' conference could also serve as a launchpad for broader consultative and educational efforts aimed at engaging a wider range of Canadian companies, organizations and communities on questions related to the future of the boreal.[13]

In addition, the conference could serve as an effective forum for articulating the most appropriate role Canada should play internationally in promoting the interests of the world's boreal region. With nearly a third of the world's boreal within its borders, Canada has a responsibility and an opportunity to be an international leader in the responsible stewardship of the planet's largest and most important terrestrial ecosystem.

Canada could call on other nations with boreal ecosystems – the United States, Russia, the Scandinavian countries, Japan and China – to join in a cooperative effort to:

- share data and research results on the boreal;
- share best management practices;
- address common challenges and develop common standards for conservation in the boreal;
- better incorporate traditional ecological knowledge into decision making in the boreal; and
- work to better integrate boreal-specific issues into multilateral environmental agreements.

2. Establish a Boreal Network of Centres of Excellence

Recommendation:
Federal, provincial and territorial governments and other funding partners should cooperate to establish a new Network of Centres of Excellence on the boreal. The network would provide leadership and promote cross-jurisdictional and multi-sectoral research and cooperation on the production, sharing and application of information on the boreal in support of sound decision making.

There are a number of promising initiatives underway in Canada to address the serious information gaps on the boreal (see Appendix C for details). However, there is still one missing link: an organization to play a national leadership and coordination role in meeting the information needs of government, corporate, Aboriginal and community decision makers in the boreal.

A Network of Centres of Excellence (NCE) on the boreal could play this broader role. It could serve as an independent network to promote cross-jurisdictional, multi-sectoral approaches to research and information cooperation on the boreal. It could also have a strong public policy focus, to help link the results of research to the current and emerging needs of decision makers.

A boreal NCE would be part of the established and well-regarded Network of Centres of Excellence program, which is funded by the federal government.

NCEs are nationwide research partnerships among universities, industry, government and not-for-profit organizations. A boreal NCE could be tasked with:

- partnering with a broad range of key interests, including federal, provincial and territorial governments, industry, civil society, and Aboriginal and academic leaders to address information gaps and champion the need for integration in the area of boreal information;
- addressing the pressing public policy challenges currently confronting the boreal;
- providing the institutional focus and leadership needed to articulate common definitions and standards, collect information about the boreal, establish mechanisms for data validation, and offer sectoral and functional windows of access to boreal information for stakeholders; and
- linking to new and evolving information initiatives (particularly the National Land and Water Information Service, the Canadian Wetlands Inventory and the National Forest Information System).

An NCE for the boreal would be a natural extension and expansion of the work done by the Sustainable Forest Management Network (SFMN). The SFMN is an NCE, housed at the University of Alberta, that has brought university researchers together with forestry companies, provincial and federal government departments, First Nations groups and non-government organizations. Its goal is to promote environmentally and socially sustainable forest management methods by generating new knowledge and, through research, finding answers to management questions that affect all the partners. The SFMN's funding will end in 2009; however, it is looking for ways to become self-sustaining.

Finally, a key component of a boreal NCE would be to continue the work of the SFMN in Aboriginal forestry research if, as expected, that network does terminate. Currently, the SFMN is the only research institute that has a dedicated budget for research on Aboriginal issues.[14]

5. Improve the Capacity for Climate Change Adaptation in the Boreal

Recommendation:
Federal, provincial, territorial, Aboriginal and community-level governments, industry, and civil society organizations should cooperate to:

- improve understanding of how climate change may affect the boreal and its residents;

- help build awareness among their constituencies of the challenges posed by climate change and of the need to put in place adaptation strategies to reduce the environmental, social and economic impacts of climate change; and
- support the development and implementation of adaptation strategies at the sectoral and community levels to reduce the potential social and economic impacts of climate change in the boreal.

Effective adaptation strategies need to be based on good information about how climate change could affect existing biophysical conditions. Therefore, all parties must cooperate to identify and address critical knowledge gaps, such as the vulnerability of specific species to climate change and the likely associated social and economic implications.

It will not be enough to convince resource managers and communities that climate change impacts, however uncertain, pose a real risk to the boreal. Rather, adaptation to the possible effects of climate change must be linked to current forest management and community development objectives as designed by policy and decision makers. The goal is to encourage governments, industries and communities to think about climate change adaptation in the boreal not as a separate issue but very much as part of their overall economic and social development plans for the future. Climate change adaptation strategies ought to be viewed as a risk management component of sustainable forest management and community development plans.

Climate change adaptation for the boreal requires:[15]

- establishing objectives for the future of forest and aquatic systems under climate change;
- increasing awareness and education within the forestry community about adaptation to climate change;
- determining the vulnerability of boreal ecosystems and forest communities;
- developing cost-effective adaptive actions for the present and the future;
- managing boreal ecosystems to reduce vulnerability and enhance recovery; and
- monitoring to determine the state of the forest and identify when critical thresholds are reached.

Adapting to climate change will not be simple, but there is room for optimism. Many of the projected impacts of climate change on the boreal – fire, disease, insects and reforestation failure – are the very issues that forest managers and communities have extensive experience in addressing.

STATE OF THE DEBATE

The NRTEE observed the following issues and perspectives in the state of the debate during the deliberations of the Boreal Forest Program task force and during consultations with government, industry, community, Aboriginal and civil society leaders.

Information

The NRTEE heard widely differing views on the extent to which information is a problem in the boreal. While there was general agreement that more can be done to share data with others, some provincial and federal government officials strongly disagreed with the suggestion that information on the boreal is generally inadequate. Some argued that in many cases there is actually too much data. In their view, the most serious challenge is the lack of capacity to undertake analyses of available data in order to generate useful information for decision makers.

There also continues to be a divergence of views on public access to information. Many environmental and Aboriginal groups asked that information held by governments and industry be widely shared to support more open and informed decisions concerning plans for the boreal. In contrast, some provincial officials believe that problems regarding information availability are overblown, and that there are administrative limits to just how much can be shared and how quickly. Furthermore, companies have concerns about the public availability of proprietary information.

A number of provincial officials noted that no matter how much information there is, it will never be enough. Moreover, given the lack of resources and capacity, additional information would do little to improve the quality of decision making.

New Institutions

There was reluctance on the part of several task force members to propose a new institution, such as a boreal information council, to address the need to better coordinate and integrate information production and sharing. These members suggested that existing networks and information initiatives (such as the Sustainable Forest Management Network, the Canadian Information System for the Environment and the new National Land and Water Information Service) could be renewed or expanded to better address the information needs of the boreal identified in this report.

However, others suggested that although there are many information systems in place, an ecosystem-focused institution is needed to ensure an independent approach that could adopt the multi-sectoral and multi-jurisdictional focus needed to properly address the information needs of the boreal. In their view, a boreal Network of Centres of Excellence would not be a new institution, per se, because the NCE is an established program, with an established framework and funding arrangement, and with plans to establish new networks. They also noted that a recommendation for a renewal of federal funding for the SFMN was not likely to be fulfilled, given the strict policy on renewal of NCE funding.

Climate Change Perspectives

In its consultations, the NRTEE heard many views on climate change. While there was consensus that climate change is clearly an important element shaping the future of the boreal, there was no agreement on how the Boreal Forest Program should address it.

Some considered that, in looking at the future of the boreal, climate change is the single issue that could trump or dominate all others, and therefore should inform the entire report, with recommendations addressing priority concerns. Moreover, many Aboriginal communities feel that climate change is a priority that should not be overlooked when dealing with Aboriginal issues. Others suggested that, while

climate change is certainly important, other issues (related to the cumulative effects of resource development in a number of sectors) are affecting the boreal ecosystem in a more direct and immediate manner.

The Program dealt with climate change by identifying its importance as a factor affecting the future of the boreal, and by drawing attention to how adaptation may serve governments, industry, communities and others in addressing the uncertainty of climate change impacts. However, the NRTEE recognizes that much more work will be needed to understand the impacts of climate change on the boreal ecosystem and on the industries and communities it supports.

It is worth noting that the NRTEE is currently working to provide, at the request of the Prime Minister, advice on a long-term strategy for energy and climate change. The Prime Minister has asked that this advice focus on defining Canada's national interest with respect to climate change impacts, and how the national interest can best be advanced in a carbon-constrained world economy. The analysis will include identification of potential economic opportunities in a post-Kyoto context and recommendations on how to position Canada to compete under long-term carbon constraints.

PUBLIC EDUCATION ON FOREST MANAGEMENT: SWEDEN'S "GREENER FORESTS" STUDY CIRCLES CAMPAIGN

To help realize the economic and environmental goals of Sweden's Forest Policy, the Swedish Board of Forestry undertook an information campaign, "Greener Forests," using innovative "study circles" to involve as many forest owners and forest industry workers as possible. The goal of the campaign, which was undertaken from 1999 to 2001, was to raise awareness of how both economic and environmental benefits could be achieved in Sweden's forests (more than half of which are privately owned).

Training and information involved about 100,000 forest owners and others who deal with forestry, as well as the general public and schools. The education campaign included professionally guided "Greener Forests" courses consisting of indoor study and trips to some of the nearly 200 demonstration sites established throughout the country. Issues addressed included forest history, Sweden's vision for forest development, wood production, nature conservation and cultural heritage protection, and the ecological and economic importance of water in the forest. Courses involved about 20 hours of work.

Source: **www.gronareskog.nu/English/folder.htm**.

BOREAL LEADERSHIP COUNCIL

The Boreal Forest Conservation Framework, released in December 2003, was developed in concert with leading conservation organizations, resource companies and First Nations. Convened by the Canadian Boreal Initiative (CBI), this group of leaders now forms the Boreal Leadership Council.

As signatories to the Framework, members of the Council are committed to a national vision and agree to take action in their own spheres of activity. The national vision articulated in the Framework calls for the establishment of a network of large interconnected protected areas covering about half of the country's boreal region – which includes the boreal forest, the aspen parkland and the taiga – and the use of leading-edge sustainable development practices in remaining areas.

As secretariat to the Council, the CBI works with Council members to expand endorsement of the Framework in a variety of sectors and to generate on-the-ground examples of the Framework principles in action.

Source: **www.borealcanada.ca/framework_blc_e.cfm.**

PARTNERSHIPS FOR CONSERVATION INFORMATION: THE BOREAL CONSERVATION PROJECT IN ALBERTA

The Boreal Conservation Project (BCP) is a partnership between Alberta-Pacific Forest Industries Inc. (Al-Pac) and Ducks Unlimited Canada (DUC) that is focusing on developing a watershed-based conservation plan for a 115,000 km² area of northeastern Alberta, including Al-Pac's 58,000 km² Forest Management Agreement area. Both partners are contributing significant financial and staff resources toward development of the conservation plan, which will enhance sustainable resource management in the boreal forest.

The project area has been inventoried and mapped using DUC's earthcover classes and enhanced wetland classification system. Water bird survey results are being modelled to identify management scenarios and high-importance conservation areas such as source waters and key wetland systems. Hydrology research results will support adaptive management, facilitating the mapping of hydrologic risk and the exploration of riparian management options. It will also inform decisions on where to place roads.

Aboriginal land use information is incorporated into geographic information systems for use in resource management and in preserving Aboriginal culture. The partnership is also actively reaching out to the provincial government and other forest and energy companies working in the project area to broaden its scope and impact.

Best management practices developed for the BCP can be transferred to other partners and industry, or used as a model in other regions of the boreal plains.

Source: Ducks Unlimited Canada staff, personal communication, February 2005.

While this work will focus on energy issues, the NRTEE has also been asked to provide advice on a Canadian definition of what constitutes dangerous anthropogenic interference with the climate system. The NRTEE's advice, scheduled to be submitted in April 2006, will be in the form of a risk assessment, and will consider areas of key climate change impacts and the associated adaptive and mitigative options for Canada.

3.2 Economic Instruments

CHALLENGES

Limited Rewards for "Raising the Bar"

If conservation of natural capital is to be achieved in balance with development, the primary actors on the working landscape – resource companies and other industries in the region – must be encouraged to conduct their operations in the most ecologically sensitive manner possible.

In some provinces, companies have already voluntarily introduced sound conservation practices to reduce their "ecological footprint" in the boreal. For example, significant progress has been made in recent years in reducing impacts from seismic operations through "low impact" technological innovations. Techniques include cutting very narrow seismic lines, the use of GPS (global positioning system)-guided equipment that moves through the forest along non-linear paths, avoiding large trees and sensitive habitat patches where possible, limbing trees rather than removing them, and mulching to facilitate regeneration.

However, these practices are not consistent throughout the boreal region. One of the challenges is that "industry leaders who are going above and beyond regulatory requirements (to introduce more sustainable practices) face higher cost structures than competitors who are not doing the same, which may make the leaders more economically vulnerable ...."[16] Companies taking the lead in conservation "are effectively penalized relative to their less progressive competitors," and risk being out-competed by companies that are not making similar efforts.[17]

If conservation of natural capital is to be achieved in balance with development, the primary actors on the working landscape – resource companies and other industries in the region – must be encouraged to conduct their operations in the most ecologically sensitive manner possible.

Public policy measures can help level the playing field by offsetting some of the cost increases borne by the leading companies in the short to medium term (i.e., until the leaders receive a market benefit for their efforts, or until the entire industry shifts toward sustainable practices). Policy measures also can raise the bar for an industry by encouraging more companies to adopt leading sustainable practices.[18]

Ecological fiscal reform is one of the most powerful means at the disposal of governments to influence outcomes in the economy. As noted in section 2 (under "Domestic Policy Trends"), EFR uses policy tools such as taxation measures, tradable emission permits, direct spending and program expenditure to influence the behaviour of industries and individuals in pursuit of environmental objectives. EFR measures seek to:

- remove policy barriers to voluntary stewardship, by targeting existing fiscal disincentives to conservation by industry;
- provide fiscal incentives to promote further corporate conservation initiatives; and
- encourage market approaches to provide flexibility for industry and encourage efficient marketplace solutions, thereby strengthening industry competitiveness.

Despite the potential, governments in Canada have yet to apply EFR in a strategic way to influence public and corporate decisions in support of conservation.

The Government of Canada did recently signal its interest in applying economic instruments (including EFR measures) for achieving environmental goals in an efficient manner. In its 2005 budget, the government proposed expanding the Wind Power Production Incentive and EnerGuide for Houses Retrofit Incentive programs, as well as accelerating capital cost allowances for a broadened range of efficient and renewable energy generation equipment. The government "intends to go further, and will do so in successive budgets."[19]

However, the budget noted that the use of the tax system to advance environmental goals, or any other objective of public policy, must be "pursued within the context of a commitment to balanced budgets and sound fiscal management."[20] The government stated that it will evaluate proposals for any new environmental taxes on a case-by-case basis, taking into account five key criteria: environmental effectiveness, fiscal impact, economic efficiency, fairness and simplicity.

Market Approaches: Consumer-driven Changes

The global consumer movement and the rise of "buy green" campaigns have demonstrated that international market pressures can be an important stimulus for conservation for companies operating in a global economy. Companies failing to meet market criteria for environmentally responsible or sustainable operations may suffer a competitive disadvantage or even be the target of consumer boycotts.

Forest certification, for example, is becoming a recognized and required standard in the global marketplace. Certification offers independent assurance to local communities, investors, and domestic and foreign customers that a company's forest management and practices meet predetermined criteria, including environmental standards.

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The global consumer movement and the rise of "buy green" campaigns have demonstrated that international market pressures can be an important stimulus for conservation for companies operating in a global economy.

Several certification programs are in use in Canada's boreal, including ISO 14001, the Canadian Standards Association system (CSA), the Forest Stewardship Council (FSC) initiative and the Sustainable Forestry initiative (SFI).

However, there are clear differences between each certification scheme. ISO 14001 is a program that certifies for technological and process innovation, while the CSA and FSC certify companies based on aspects of sustainable management practices and the engagement of other stakeholders. FSC is the standard that has received the most support from Aboriginal and civil society organizations.

RESULTS FOR THE BOREAL

The NRTEE believes that in responding to these challenges, Canadian governments should work toward the following result for the boreal:

More resource companies adopt conservation practices in the boreal in response to economic incentives.

OPPORTUNITIES FOR ACTION

The NRTEE proposes the following measure in support of the desired result in the area of economic instruments:

4. Expand the Use of Fiscal Incentives to Promote Conservation by Resource Industries in the Boreal

Recommendation:
Federal, provincial and territorial governments should work together to coordinate the expanded use of fiscal incentives to encourage the early adoption of environmentally friendly technologies and processes in the boreal.

There are immediate opportunities to use fiscal incentives to help move companies active in the boreal toward the adoption of more environmentally friendly practices. Such incentives could facilitate the development of new practices and technologies as well as the increased utilization of low-impact, "light footprint" equipment.

Two measures appear particularly promising:

- amending the Scientific Research and Experimental Development (SRED) program to make it easier to use in developing innovative practices with environmental benefits; and
- coordinating the use of federal and provincial transitional tax credits to encourage the early adoption of environmentally friendly technologies.

1. The Scientific Research and Experimental Development Program

The SRED program was designed to provide an incentive for businesses to invest in the development of new technologies and processes. Its tax credit scheme allows for the deduction of 100% of qualifying current and capital expenses in the year incurred, and a 20–35% credit against taxable income relating to SRED. Three broad categories of work are eligible:

- *basic research*, undertaken to advance scientific knowledge;
- *applied research*, undertaken to advance scientific knowledge with a specific practical application in view; and
- *experimental development*, undertaken to advance technology for creating new, or improving existing, materials, devices, products and processes.

Canadian industry has not made significant use of the SRED program, and some sectors, such as mining, have used it very little. In the case of the forest industry, only the pulp and paper sector has tended to make use of the program. The SRED program has been criticized for being too administratively burdensome, and for focusing on end products rather than processes and practices.

Furthermore, current rules of the program do not recognize the new application or innovative modification of existing technologies to protect the environment. Changing this limitation will require the development and articulation of new rules or policy guidelines that clarify what practices may qualify.

The Resource and Environmental Taxation Division of the Tax Policy Branch of the federal Department of Finance and the Scientific Research Section of the Verification, Enforcement and Compliance Research Branch of the Canada Revenue Agency, in concert with relevant industry groups and other stakeholders, should work together to re-examine the barriers to the program, and provide recommendations for changes that could encourage its uptake by industry.

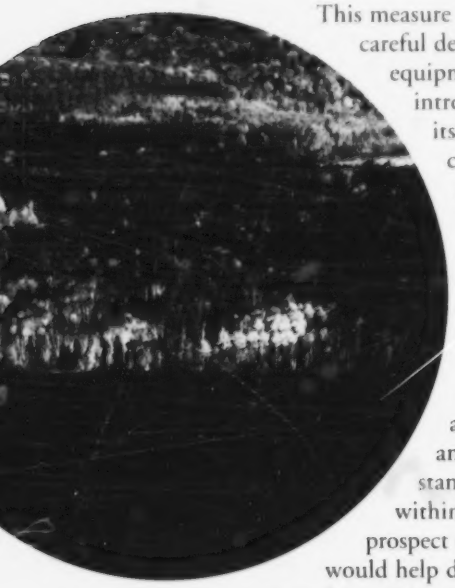
Development of a "green stream" of the program might also be considered, to address and ultimately reward the development of technologies and processes of demonstrable benefit (in reducing impacts) to the environment. Part of this effort will need to include a communications effort by the federal government and

national industry associations to improve awareness of the opportunities under the SRED program among the various sectors active in the boreal.

2. Transitional Tax Credits

A second fiscal measure worth considering is the use of transitional tax credits tied to the early adoption of environmentally friendly technologies.

A transitional tax credit is a tax incentive of temporary application with respect to a targeted technology. Credits are phased out over time as the targeted technology becomes widely adopted and eventually mandated. Accelerated capital cost allowances are the most common form of such a transitional tax credit.



This measure would require the careful definition of qualifying equipment. As well, the introduction of tax credits would need to be combined with the announcement of higher future standards. For example, the introduction of tax incentives for the use of low-impact seismic technology could be accompanied by an announcement of new standards to be adopted within five years. The prospect of tighter regulations would help drive innovation to meet the anticipated demand for such equipment. At the same time, the tax credits would have sunset clauses and would be phased out as firms were moved to the higher standards (indeed, the recent increases in depreciation rates to facilitate investment in renewable energy are limited to a seven-year period, at which point they will be re-examined).

An important component of such regulation is the need to ensure that it is coordinated across jurisdictions (so that stricter regulation in one province does not simply shift the non-compliant equipment to another province lacking such regulation).

STATE OF THE DEBATE

The NRTEE observed the following issues and perspectives in the state of the debate as expressed during the deliberations of the Boreal Forest Program task force and during consultations with government, industry, community, Aboriginal and civil society leaders.

Market Approaches and an Expanded EFR Toolkit

There was general support among task force members for greater application of EFR in advancing conservation in the boreal. However, task force members emphasized that EFR measures must be carefully considered on a case-by-case basis, to ensure that they are addressing a real problem (i.e., a clear barrier or market failure). There was also concern regarding the possibility of "free riders" (companies that benefit from a new fiscal measure for something they were going to do in any case).

While there was recognition of the importance of market approaches in encouraging conservation by industry, most task force members felt that current international and domestic market forces (e.g., customer demands) are sufficient to encourage forest companies to obtain forest certification, and that no government involvement through fiscal or regulatory incentives is needed. However, a small minority argued that some regulatory streamlining is necessary to encourage forest certification.

There also was a recognition among task force members that some of the more innovative economic instruments, such as creating a market for environmental goods and services, were likely to meet opposition, if only because they are so untested and raise so many questions. Rather than rejecting such measures outright, however, there was still general support on the task force for moving forward on a pilot basis to evaluate these measures and gain experience.

FISCAL REFORM IN THE FOREST: COSTS AND BENEFITS OF ENCOURAGING SMALLER SEISMIC LINES THROUGH A TAX CREDIT

Historically, conventional seismic activity used straight, very wide lines to enable access for heavy equipment. For example, in the late 1980's, seismic lines were regularly cut to a width of 6-8 meters. Conventional seismic practices are now the exception as the vast majority of today's seismic activity is considered low-impact i.e. techniques employed to reduce impact or disturbances on the land. Equipment now used to clear seismic lines is more compact, therefore reducing the width of the disturbance to an average under 3 meters, less than half that of conventionally cleared lines.

Some of the ecological benefits of improved geophysical exploration practices include:

- Reduce creation of travel corridors for predators (i.e., wolves)
- Reduce creation of new public access and associated impacts on wildlife, particularly prey species (e.g., illegal hunting, habitat alienation)
- Increase rate of re-growth and regeneration to natural vegetation to reduce net footprint, persistence of corridor on the landscape

However, the cost increases as the width progressively narrows because increasingly expensive technologies or practices are required.

The lowest impact technologies involve the use of helicopters to transport the drilling equipment and/or hand cut, meandering lines. These minimal impact techniques leave virtually no environmental footprint on the land after one growing season. The costs of using these techniques and equipment can be up to 300% more expensive than a regular mechanical cut line. Currently in Alberta, less than 20% of the seismic activities qualify as minimal impact. There are other factors that may make it impossible to achieve 100% minimal impact such as worker safety considerations and regulations, the nature of the subsurface geology, and the topography of the surface. This percentage could certainly increase dramatically with the use of tax credits.

If tax credits are used to encourage this shift, then the actual costs of such measures will depend upon the existing patterns of use and the desired outcome. The tax credit required will be that amount sufficient to move existing operators to the required technology (if they are not currently operating at that level).

Source: Information provided to the NRTEE by the Canadian Association of Petroleum Producers, April and May 2005.

3.3 Planning and Regulatory Processes

CHALLENGES

A key challenge to conservation in Canada's boreal region lies in the realm of governance, particularly the lack of coordination in the allocation, planning and management of the ecosystem across and within jurisdictions. This lack of coordination reflects, in part, the constitutional division of powers with respect to resource management. Below is a brief description of the legislative framework as it applies to the boreal.

A key challenge to conservation in Canada's boreal region lies in the realm of governance, particularly the lack of coordination in the allocation, planning and management of the ecosystem across and within jurisdictions.

Legislative Framework

The legislative framework for industrial activity can be viewed as having three broad components: the "tenure" system (or more broadly, the resource allocation system, which includes licensing arrangements), the "regulatory" system, and the indirect legislative incentives and disincentives.

The tenure/licensing system consists of the legislation specifying the nature of the legal rights granted by governments to extract or harvest and produce minerals and timber and the processes for granting those rights. Because most boreal forest resources in the provinces are provincially owned, the allocation legislation for those resources is primarily provincial or territorial. Certain federal statutes also govern resource tenures in Yukon and the Northwest Territories.[21]

The regulatory system includes the legislation, rules, guidelines and directives related to resource management. It includes legislation establishing various regulatory boards mandated to review and authorize various types of development projects.

The full set of indirectly relevant legislation includes laws relating to taxes, financial grants, indirect subsidies (e.g., government-funded construction of roads to access development sites or government-funded scientific or technical research) and international trade.

An estimated 50 or more statutes directly comprise the legislative framework for industrial development in the boreal.[22] Other statutes relating to resource taxation, trade and other financial matters also come into play.

The legislative framework encompassing management of the boreal is highly complex. Contributing factors include the fragmented constitutional division of powers between the federal and provincial governments; the fact that the boreal falls within multiple jurisdictions; the sector-specific nature of resource management legislation within the provinces; the progressive devolution of federal control to the territorial governments; and Aboriginal title and rights.

The "Silo Effect"

Within most provincial and territorial governments, separate departments or agencies are typically responsible for managing mineral and timber resources, water uses, pollution and environmental protection. The fragmented legal and administrative arrangements tend to focus decision makers on relatively narrow issues. For example, in some jurisdictions the forestry and petroleum sectors must adhere to two fundamentally different sets of rules and planning horizons. Proposals for energy and forest activities within the same area will be subject to different regulatory processes with little or no coordination to identify potential areas of overlap or cooperation.

Under the "silo effect," planning and decision-making processes remain isolated from one another, inhibiting efforts to set landscape-level objectives and manage the cumulative effects of development across sectors.

RESULTS FOR THE BOREAL

The NRTEE believes that in responding to these challenges, Canadian governments should work toward the following result for the boreal:

Planning and management processes relating to the boreal are well coordinated within and across jurisdictions, and effectively integrate multiple uses.

OPPORTUNITIES FOR ACTION

The NRTEE proposes the following measure in support of the desired result in the area of planning and regulatory processes:

5. Strengthen Integrated Landscape Planning and Management Through Innovative Approaches

Recommendation:
Federal, provincial, territorial, Aboriginal and community-level governments should work together to strengthen integrated landscape planning and management in the boreal by introducing and evaluating innovative planning, tenure and management mechanisms.

A common conclusion of the Boreal Forest Program case studies, community workshops, consultations and task force dialogue was that the absence of integrated planning and decision making across sectors and land uses, and among the stages of decision making that make up regulatory regimes, is a significant barrier to conserving natural capital in the boreal. Given the potential for cumulative environmental effects arising from a number of resource development activities on the same landscapes, comprehensive and integrated approaches to land and resource planning and management are needed to set and achieve landscape-level conservation objectives. These integrated approaches are commonly referred to as integrated landscape management (ILM).[23]

ILM has received considerable attention over the past several years at the national level. A national coalition has been established (see box), and several provinces have been revising their planning processes to promote greater coordination in the early planning stages.

Improved integration can be achieved through a variety of mechanisms.[24] Informal and formalized inter-industry cooperation has proven successful in helping energy and forest companies reduce the need for roads and other linear disturbances. At the operational level of regional resource and environmental management, ILM can be addressed through changes to resource management, project review and regulatory processes to ensure coordination across sectors and land uses and to provide a framework for cumulative effects management. Other possible mechanisms include

NATIONAL INTEGRATED LANDSCAPE MANAGEMENT COALITION

The National Integrated Landscape Management Coalition (ILMC), led by Wildlife Habitat Canada, is a consortium established to advance and accelerate integrated landscape management in Canada by influencing key decision makers regarding the development of appropriate policies, practices and tools. It is made up of representatives from federal and provincial government agencies, academic and research institutions, conservation organizations, natural resource sectors (energy, mining and forestry), and anglers and hunters. The coalition has proposed the following activities:

- **undertaking a survey and analysis of Canada's current capacity to undertake landscape management, to determine the current obstacles and opportunities and needs;**
- **convening a national workshop involving researchers, land and resource planners and developers, and policy makers to determine the current state of understanding of ecological thresholds in relation to land and resource use and to develop a research program to enhance understanding of ecological thresholds;**
- **continuing to communicate on the needs and requirements of integrated landscape management among key stakeholders and to build awareness and support for landscape management across Canada;**
- **establishing and promoting demonstration sites; and**
- **establishing a network of individuals with expertise and interests in integrated landscape management.**

Source: Wildlife Habitat Canada staff, personal communication, February 2005.

new models of governance, such as structural changes to legal and institutional frameworks that can, for example, involve a single agency that is accountable for setting and achieving longer-term landscape-level objectives.

Despite its promise, however, ILM has yet to become standard practice in Canada. The "silos" remain in most planning and regulatory regimes affecting the boreal. Real legal, economic and regulatory problems need to be overcome. As well, there has been only limited engagement of ILM at senior levels of decision making in the public and private sectors – there is little sense of urgency among the different interests active in the boreal, and little evidence of innovative spirit to make ILM work.

The pre-tenure/licensing planning experience highlighted in the M-KMA case study is an important exception. But its potential for widespread application is limited in most of the boreal's working landscape, where development rights have already been granted.

Given the importance of ILM to the boreal's future, federal, provincial, territorial and Aboriginal governments should seek to generate greater awareness of and enthusiasm for ILM mechanisms. One practical and cost-effective approach is to establish pilot projects to evaluate the feasibility of planning and tenure/licensing innovations designed to promote comprehensive and integrated resource planning and management. Pilot projects can help identify what works, what barriers remain and what the next steps should be.

There appear to be opportunities to pursue ILM pilot projects in two areas:

- cross-border "model boreal areas," building on the highly successful model forest concept; and
- tenure/licensing reforms providing for an "unbundling" of rights to the land base, thus allowing the exchange and trading of rights to public goods.

1. Cross-border "Model Boreal Areas"

Canada's model forests have been excellent tools for promoting innovative approaches to sustainable forest management through partnerships. Canada's model forest program is also well regarded internationally – for example, Sweden and Russia have established similar programs. However, the results of the model forests have generally been locally based, and there has been mixed success in extending the results beyond the immediate model forest framework.

Based on its case study findings and consultations, the NRTEE proposes that the model forest framework expand beyond its current reaches to establish "model boreal areas" extending across provincial or provincial–territorial borders and addressing multiple uses. Partner jurisdictions could work together to promote a landscape-level approach to comprehensive land use planning and management.

To launch the concept, a pilot cross-border model boreal area project could be established where multiple activities are occurring on the land base – such as agriculture, forestry, oil and gas, and tourism – and where progressive companies are willing to work with provincial governments within the multiple jurisdictional framework.

2. Tenure and Licensing Reforms

Reform of traditional tenure and licensing systems for resource development may represent an important opportunity for immediate action in support of conservation in the working landscape of the boreal.

Tenure/licensing reform is currently being examined in the boreal, as a result of internal and external forces. Competitiveness concerns, pressure from the United States over softwood lumber tariffs, the Coulombe Commission and over-allocation have all led governments and others to think about innovative approaches to the allocation of the forest resource.

The challenge is to apply modified planning and regulatory measures that can ensure direct public benefits from resource development while rewarding (or at least not discouraging) private sector actions that will help conserve natural capital. The objectives of these reform measures are to:

- increase the flexibility of resource companies to manage their operations in the boreal so as to minimize individual and cumulative impacts on natural capital;
- facilitate the integration of multiple objectives and responsibilities into comprehensive land use planning decisions; and
- promote transparency and allow wider participation in land use planning decisions.

Such reforms are consistent with and supportive of the federal government's smart regulation approach; they should lead to more streamlined and coordinated regulations that can help achieve environmental objectives while contributing to innovation and competitiveness.

The innovations essentially involve an "unbundling" of rights to the land base, thus allowing the exchange and trading of rights to public goods. Depending on the design of the reforms, it would be possible to utilize mechanisms such as "offsets" (requiring enhancement or protection of an area in exchange for development rights in another area) or conservation easements (permitting third parties to negotiate directly for the right to manage Crown land where in this case the environmental service would be biodiversity outputs).

Such innovations would offer increased opportunities for firms to innovate to find the most efficient way to meet their objectives. However, there is a need to set appropriate targets to reflect the social benefits derived from environmental services (i.e., the level of environmental benefits to be achieved).

This kind of institutional development is likely to involve a considerable degree of uncertainty and require upfront investment. Experience with the development of carbon markets as part of Canada's broader response to climate change may reduce the costs of developing other environmental markets. Once a framework for identifying carbon values has been developed, along with the trading rules and allocation of rights, it may facilitate the development of markets for other environmental goods and services such as markets for "biodiversity units." The development of carbon markets could also help provide information on other environmental resources, as carbon accounting keeps track of above- and below-ground carbon pools, and thus provides indirect information on the biodiversity associated with a particular site.

Below are two specific tenure/licensing reform measures that are being researched by a variety of organizations and could be considered by the provinces and territories as they examine their regulatory and planning frameworks concerning the boreal.

1. Enabling the Establishment of Conservation Easements on Public Lands on a Pilot-Project Basis

In granting rights for development, a government decides on the socially optimal levels of conservation and development it wants to achieve. However, the government may wish to allow some voluntary public involvement in the process of land use allocation. It may decide, for example, to identify minimum thresholds for conservation through regulation and allow for higher levels of conservation to be achieved through private means.

A conservation easement is an arrangement by which a landowner forgoes some development rights in perpetuity on part or all of the land.

A conservation easement is an arrangement by which a landowner forgoes some development rights in perpetuity on part or all of the land. The idea of using conservation easements to achieve conservation objectives in the boreal was introduced to the NRTEE's Boreal Forest Program through the Al-Pac case study. Conservation easements have been used in the United States on private lands. Typically, the creation of an easement allows the owner to realize some value from the forgone rights, either through tax write-offs or payments by third parties (typically environmental or conservation groups) for those rights. An easement, therefore, allows members of the public to show their preferences for environmental conservation through their willingness to pay.

In situations where a government has already allocated the harvesting or development rights to private companies, the easement system provides incentives for private action to conserve without the need for government compensation. However, a government must retain the option to regulate the extent to which firms forgo development rights on government lands (and may also seek to share some of the revenues that may accrue from selling such rights).

To support the more extensive use of conservation easements by private companies, governments should ensure that an integrated land use plan is in place identifying thresholds for development and conservation.

2. Establishing Transferable Development Rights on a Pilot-Project Basis

Transferable development rights (TDRs) can be used to conserve natural capital by creating markets for the right to activities that impact upon that capital. TDRs are assets created by a government that can be used to compensate disposition holders for the non-development or non-exploitation of their land. TDRs can be thought of as an environmental management tool that combines regulatory and market

In principle, TDRs reduce the opportunity cost of setting aside land for conservation in areas more highly valued for development, because they allow for land elsewhere to be substituted at lower cost.

approaches. Governing authority is required to set zones, or thresholds for utilization, while a market-like institution is used to achieve the environmental objective.

In the conventional model, landowners who sell TDRs permanently preserve their lands while buyers increase the density of development in a less-sensitive location. The fact that the underlying title to the land is not altered makes TDRs compatible with existing tenure/licensing structures and facilitates their implementation.

Common examples of TDR-like systems include mitigation banking for wetlands and farmland preservation in urban fringes. TDR approaches have tended to be applied on a local basis, and there is as yet no widespread application of such markets in either Canada or the United States.

An important characteristic of TDRs is that they separate ownership of the right to develop land from ownership of the land itself, creating a market in which the development rights can be bought and sold.

In principle, TDRs reduce the opportunity cost of setting aside land for conservation in areas more highly valued for development, because they allow for land elsewhere to be substituted at lower cost. Allowing trade-offs generally maintains or increases the value of land.

In any situation where offsets are allowed or rights are traded there is a need to define the rights precisely. An important dimension in such definition is the length of time during which the right can be exercised, the extent of the right and its dominance over other rights. Tradable rights derive their value from constraints or targets imposed by regulation. For example, a forest owner may be required to conserve a certain amount of forest ecotype. An owner of highly valued forest may face a high opportunity cost and be ready to purchase and conserve less valuable forest of that type elsewhere. Alternatively, the owner may prefer to pay another forest owner to conserve part of its land.

Targets need to be defined in terms of measurable outcomes. For example, if a regulation limits the amount of disturbance in a system, it is necessary to identify whether that disturbance is permanent or temporary and its impact on alternative types of habitat. The difficulties are limited information and uncertain science. Precision in defining outcomes may restrict the size of markets either geographically (e.g., to township units rather than a watershed) or in magnitude of impact (e.g., protection of a specific ecotype). As markets become more localized and narrower, the benefits from trading are reduced – there is less opportunity to seek more efficient trade-offs.

Developing offset systems and markets requires the careful development of measurement and monitoring methodologies and institutions. This takes time and experience. As well, the implementation of a TDR system for the boreal may face difficulties, particularly when new rights are created and are in conflict with existing rights. Therefore, it is proposed that TDRs be introduced gradually through pilot projects allowing experimentation and adaptation.

The Sustainable Forest Management Network is supporting a major project that will focus on developing a mechanism for implementing tradable rights in Canada and will explore the specific institutional configurations and regulations needed to support such markets.

STATE OF THE DEBATE

The NRTEE observed the following issues and perspectives in the state of the debate as expressed during the deliberations of the Boreal Forest Program task force and during consultations with government, industry, community, Aboriginal and civil society leaders.

Allocation of Rights in the Boreal

There was a consensus around the task force table that a central issue in looking at the future of Canada's boreal is the allocation of rights. On much of the working landscape of the boreal, rights to use the boreal have already been allocated (e.g., for forest development, oil and natural gas exploration and development, mining, agriculture and hydroelectric generation).

As a result, there may be little room for accommodating new, alternative uses (and by definition, new rights) of these areas for purposes such as preservation of ecological services, climate change mitigation or

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management by Aboriginal peoples. To the extent that the prior allocation of rights precludes other parties from obtaining benefits from the boreal, the question of allocation itself becomes a flashpoint for disagreement and even confrontation in the boreal.

The success of Canada's largest experiment with pre-tenure/licensing planning, in the M-KMA case study area, holds important lessons for future decisions in the unallocated areas of the boreal. But the immediate challenge for all parties is how to reconcile prior allocation of development rights in the boreal with important emerging demands.

Value of Ecological Services

In reviewing the challenges to promoting integrated landscape planning and management, task force members noted the need to address the fundamental issue of ecological services valuation. There is a need to better understand what ecological services are provided by the boreal and what economic valuation can be placed on these services. Only then will decision makers be able to understand the full range of trade-offs in planning and management processes relating to allocating land and other resources in the boreal.

Transparency

Many groups expressed the need for improved transparency in how governments make decisions on who gets land and how that land will be managed.

The processes for acquiring resource tenure/licensing rights in Canada have widely varying levels of government involvement. The processes range from the largely self-directed claim-staking process that typically applies to hard rock minerals, to the competitive bidding process that typically applies to coal, oil and natural gas rights allocation. But these variations are overshadowed by two characteristics they have in common: the tenure/licensing processes generally exclude public participation (even, in many instances, public access to rights-granting instruments), and they provide governments with broad discretion to decide which areas of public lands should be open for tenure/licensing acquisition.[25]

Through case studies and consultations at the regional level, the NRTEE heard communities and others calling for a different way of "doing business" when it comes to tenure/licensing allocation and management. This was also a key issue for the Coulombe Commission in Quebec.

Community and Aboriginal Tenure/Licensing

During consultations and at the task force level, the value of community and Aboriginal tenure/licensing arrangements was frequently cited (particularly by representatives of Aboriginal and civil society

MIGRATORY BIRD CONSERVATION PLANS: "SMART REGULATION" IN THE BOREAL

Progress is being made in protecting the habitat of migratory birds in the boreal through the design of regulations under the *Migratory Birds Convention Act* (MBCA) that will spell out the elements of migratory bird conservation plans. Companies operating in areas with migratory bird habitat will be responsible for devising and implementing such plans. The Forest Products Association of Canada has pointed to this initiative as an example of smart regulation that can assure companies that they will not be held liable for incidental bird deaths or "take" (pressure to hold companies liable had been generated by the Commission on Environmental Cooperation's investigation into Canada's inadequate enforcement of the MBCA). Companies operating in accordance with a migratory bird conservation plan would be operating in accordance with best practices (for the conservation of migratory birds) and would therefore be excused from any incidental (i.e., accidental) take.

Source: Environment Canada staff (Pacific and Northern Region, and Canadian Wildlife Service), personal communication, February 2005.

organizations). It was suggested that these innovative approaches should be more broadly encouraged, facilitated and applied.

Other parties cautioned that the capacity might not exist in many communities – particularly Aboriginal communities – to take on such a responsibility. To date, there generally has not been the level of commitment on the part of governments that the advocates of community and Aboriginal tenure would like to see.

3.4 Aboriginal Peoples' Engagement

CHALLENGES

Effective engagement of Aboriginal peoples in natural resource management is a central and complex challenge to the future of Canada's boreal. More than a million Aboriginal people live in the region, and have deeply rooted traditions based on living on and using the land. The boreal is the cradle of life for many Aboriginal families. Their identity and relationship to land "is both spiritual and material, not only one of livelihood, but of community and indeed of the continuity of their cultures and societies."[26] As a result, Aboriginal peoples are seen to have a natural interest in promoting responsible resource use and extraction.

S. Arnott/NRTEE

Today, most federal, provincial and territorial governments and non-government organizations, as well as many resource companies, take the view that no major new developments or conservation decisions relating to the boreal should be made without Aboriginal support. In the future, that support will likely be forthcoming if Canadian governments and Aboriginal peoples cooperatively address the need for significant institutional reform and focused capacity development to enable Aboriginal involvement in boreal planning and management.

Lack of Institutional Engagement of Aboriginal Peoples

Constitutional Rights

An examination of Aboriginal peoples' experiences and role in the boreal must begin with the unique legal position of Aboriginal peoples. Aboriginal peoples have constitutionally entrenched rights that are tied to the land as recognized and affirmed in section 35(1) of the *Constitution Act, 1982*. Among other matters, the Supreme Court has affirmed governments' duty to engage in meaningful consultation with Aboriginal communities on decisions that potentially affect the exercise of their rights and title.

Most of the boreal is covered by modern-day or historical treaties. Modern-day treaties (comprehensive land claim settlements), which pertain to some northern parts of the boreal, have resulted in a combination of co-management arrangements and the transfer of a land base to Aboriginal jurisdiction. In most of the boreal, and particularly in southern boreal areas, historical treaties assure continuing rights for certain economic activities (including hunting, fishing and trapping) but provide little or no direction for contemporary resource management. In areas where outstanding land claims exist, Aboriginal rights include the traditional use of boreal resources, prerequisite consultation processes and, in some situations, Aboriginal title – a proprietary right to the land itself.

A key challenge for all governments in the boreal – federal, provincial, territorial and Aboriginal – is how Aboriginal and treaty rights are given substance: how they are implemented on the ground on a day-to-day basis.

This challenge is particularly difficult in an area such as the working landscape of the boreal, where governments typically have already granted rights to explore for and develop resources, and where forest, energy and mining companies have been active for a number of years. There is a potential for conflicts as development and conservation initiatives intensify in the region, and Aboriginal communities desire to have their values and rights incorporated within those initiatives. Indeed, as demonstrated historically, many

Effective engagement of Aboriginal peoples in natural resource management is a central and complex challenge to the future of Canada's boreal.

conflicts surrounding Aboriginal rights have tended to come about as a result of resource development in their traditional territories.

Institutional Engagement

With the exception of the provisions of land claim settlements and the consultation policies of some provincial governments, there is a lack of direct involvement of Aboriginal peoples in resource planning and management institutions in the boreal. New mechanisms and arrangements are needed to ensure Aboriginal peoples are appropriately and effectively engaged in boreal initiatives at the outset.

In her 2003 report, the Auditor General found that institutional arrangements between governments and Aboriginal communities with respect to land and resource issues are fundamental to more meaningful Aboriginal involvement. These arrangements can bridge the gap between the accommodation of treaty rights and the on-the-ground realities of land and resource management. They can also provide for strong community economic development and capacity building. Although there has been some recent progress in engaging Aboriginal communities in decision-making institutions, gaps still remain.

Recent Progress

At the national level, the need to involve Aboriginal peoples institutionally has been recognized in several policy areas. These initiatives include the National Forest Strategy, the National Aboriginal Council on Species at Risk (NACOSAR) and provisions to better incorporate Aboriginal perspectives into federal environmental assessments conducted under the *Canadian Environmental Assessment Act*.

A significant recent step at the federal level has been the establishment and work of the Canada–Aboriginal Peoples Roundtable. The roundtable reflects the government's desire to build a new relationship with Aboriginal peoples in Canada. The first meeting of the roundtable, in April 2004, represented a unique opportunity for members of the federal Cabinet, Senate and House of Commons to engage with Aboriginal leaders from across the country. At that meeting, the Prime Minister committed, among other things, to:

- launching discussions in six priority sectoral areas with Aboriginal groups, provincial and territorial governments, and sectoral experts and practitioners;
- convening a formal policy retreat with members of the Cabinet Committee on Aboriginal Affairs and Aboriginal leaders; and
- developing an "Aboriginal report card" to track progress toward the new relationship.

The policy retreat, which was held in May 2005, provided an opportunity for the Prime Minister, members of the Cabinet Committee on Aboriginal Affairs and the leaders of five national Aboriginal organizations to address long-term challenges. Following the meeting, leaders of the Assembly of First Nations, the Inuit Tapiriit Kanatami, the Métis National Council, the Congress of Aboriginal Peoples, and the Native Women's Association of Canada signed joint accords with the Government of Canada.

The accords seek to establish institutional relationships for the direct involvement of Aboriginal peoples in policy development. Under the accords, the federal government and national Aboriginal groups are committed to improvements in health, education and lifelong learning, housing, economic opportunities, negotiations and relationships, and accountability for results. Of particular significance to the future of the boreal is the commitment of the federal government to work with each Aboriginal organization on issues relating to land and access to land where applicable.

Provincial-Territorial Progress

Some provinces and territories are addressing Aboriginal involvement through the development of consultation policies and opportunities for Aboriginal communities to gain social and economic benefits from resource development. Examples of recent initiatives to better engage Aboriginal peoples in natural resource management include the following:

- In August 2000, the Government of Manitoba initiated a large area land use planning process for the east side of Lake Winnipeg as a pilot for broad area planning for the entire province. The East Side Round Table was commissioned by the Manitoba Minister of Conservation to develop recommendations and a sustainable land use plan for the region, based on the following three fundamental principles: maintaining the ecological integrity and biological functions of the forest; respecting and advancing the social, economic, cultural and traditional needs of First Nations, Metis and other communities; and recognizing and affirming treaty obligations and Aboriginal rights.[27]
- The landmark bilateral agreement La Paix des Braves, concluded between the James Bay Cree and the Government of Quebec in February 2002, with respect to land and resource issues, and as a vehicle for implementing key provisions of the James Bay and Northern Quebec Agreement (a modern-day treaty), is an important example of a government-to-government institutional relationship.[28]
- The Government of Alberta recently approved a First Nations Consultation Policy on Land Management and Resource Development, following up on its 2000 commitment set out in *Strengthening Relationships: The Government of Alberta's Aboriginal Policy Framework*. This initiative has resulted in several First Nations traditional land use studies, a move toward facilitating more effective consultation.

Recent initiatives such as those outlined above provide guidance on the type of institutional arrangements that are possible. However, governments are at different stages across the country in dealing with the issue of engaging Aboriginal peoples in resource planning and management.

There are concerns that initiatives to engage Aboriginal peoples continue to be made on an issue-by-issue or a community-by-community basis. Consultation is many times seen to be haphazard and is often the result of protracted court actions, blockades or confrontations.

Each province also works with Aboriginal peoples differently, attempting to fit Aboriginal issues within the framework of its own planning processes, tenure regimes and other circumstances. The NRTEE heard that there are still many legal obstacles to Aboriginal communities obtaining resource tenures, which are an important example of an institutional arrangement that considers Aboriginal values and title.

Furthermore, there is no consistent approach nationally or general guidelines or standards on how to engage Aboriginal peoples effectively, while respecting the rights of provincial governments and Aboriginal peoples. The federal government could play a lead role through institutional arrangements that provide a grounded understanding of Aboriginal and treaty rights in the context of land and resource management.

Capacity at the Community Level

A second major challenge to the involvement of Aboriginal peoples in the future of the boreal is the limited capacity at the community level to participate effectively in planning and management processes related to resource development and conservation.

Although traditional knowledge systems have enabled Aboriginal peoples to live in the boreal in a sustainable manner for generations, community capacity in today's terms means coping effectively with a multitude of change factors.

At the Aboriginal community level, capacity includes the broad abilities to design communal responses to environmental and natural resource management issues, seize the opportunity to improve community socio-economic conditions, and develop strategies to protect and enhance the community's varied interests – traditional or contemporary.

Currently, Aboriginal communities are characterized as having scarce technical, human and financial resources; low levels of educational attainment; and a small base of professional and technical expertise from which to draw. These concerns about limited capacity are compounded by the increasing demands for consultation being placed upon Aboriginal communities. Some Aboriginal groups are being overwhelmed by invitations from the Crown and industries to engage in consultations about proposed resource developments in their traditional territories. Further, as a result of the Supreme Court's rulings that consultation by the Crown is required even in cases where an Aboriginal right has not yet been formally established (as determined by the Supreme Court of Canada in November 2004 through the

Haida and Taku decisions[29]), the number of requests for consultation will only increase.

One of the biggest challenges confronting Aboriginal communities in the boreal is their remarkable population growth. Nationally, the Aboriginal population by 2017 could contain a large proportion of young adults aged 20 to 29. This age group is projected to increase by over 40% to 242,000, more than four times the projected growth rate of 9% among the same age group in the general population.[30] A key issue is to ensure that the growing number of youth in the region have the skills and resources needed to be engaged in the labour market.

Partnerships

An important trend in community capacity challenges has been the increasing number of partnerships between Aboriginal communities and either resource companies or conservation organizations.

Aboriginal–industry partnerships have often been encouraged through financial support and other incentives provided by the federal or provincial governments.[31] The partnerships include joint ventures, cooperative business arrangements and contracts for the provision of specific services. The agreements may include provision for socio-economic benefits in the form of employment, training programs, traditional land use studies and other capacity-building initiatives. Agreements negotiated between Aboriginal communities and resource companies may also make provision for the involvement of Aboriginal peoples in data collection (e.g., traditional land use studies) and monitoring of the environmental effects of industrial development. Yet, while short-term economic benefits from contracting and employment are important, Aboriginal communities are increasingly attempting to ensure that they have an equity position in industry and that they are part of broader economic development initiatives.

Aboriginal–conservation organization partnerships have also contributed to community capacity building. Agreements negotiated between Aboriginal communities and conservation organizations have focused on conservation planning using traditional knowledge and land use systems. In addition, these partnerships have acknowledged the leadership role that Aboriginal people are striving for in their traditional territories regarding land use planning and management.

Several First Nations and Tribal Councils across the boreal have established natural resource management units within their evolving governance structures. These resource management units have developed community plans, identified training needs and, through protocols, have determined the basis for their engagement. They have achieved some elements of the capacity needed to contribute to sustainable boreal planning and management, and serve as examples of best practices in community capacity building.

RESULTS FOR THE BOREAL

The NRTEE believes that in responding to these challenges, all parties with an interest in the boreal should work toward the following result:

Aboriginal peoples are empowered to contribute to and benefit from conservation and development initiatives in Canada's boreal.

OPPORTUNITIES FOR ACTION

The NRTEE proposes the following two measures in support of the desired result.

6. Strengthen Institutional Arrangements for More Effective Engagement of Aboriginal Peoples

Recommendation:
Federal, provincial, territorial and Aboriginal governments should work together to facilitate the participation of Aboriginal communities in boreal planning and management processes through effective policy and institutional arrangements that incorporate Aboriginal land rights and interests.

The long-term involvement of Aboriginal peoples in the boreal can be encouraged through governance institutions that recognize and respect the rights of all parties, and that help build common goals and cooperative approaches.

The federal–Aboriginal joint accords of May 2005 are a major step in this direction. So, too, is the recent progress in several provinces in establishing policy positions on consultation and in encouraging forest-based economic development. The challenge now is to develop institutional arrangements that will remove the uncertainty around Aboriginal issues and translate long-standing commitments into cooperative on-the-ground action among all governments and Aboriginal peoples. The boreal – with its complex web of shared jurisdiction, long history of resource development, and significant Aboriginal presence – presents an important and urgent opportunity to implement the accords and build on the provincial initiatives.

The accords, in particular, can help set the stage for more consistent national approaches to Aboriginal issues, beyond the sector-specific and issue-specific arrangements that have tended to characterize government–Aboriginal relations to date.

The objective is not to have the federal, provincial and territorial governments all adopt an identical approach – circumstances change from region to region and province to province. Rather, the objective should be a more consistent approach to Aboriginal institutional development across jurisdictions, based on common principles, best practice guidelines and a grounded understanding of Aboriginal and treaty rights.

7. Support Capacity Building in Aboriginal Communities

Recommendation:
Federal, provincial, territorial and Aboriginal governments, industry and civil society organizations should support the capacity-building initiatives of Aboriginal communities, enabling them to effectively manage their interests in the boreal.

Capacity Building

To improve the capacity of Aboriginal communities to effectively engage in boreal planning management, and to respond to the increasing number of requests for consultation, all parties with an interest in the boreal should coordinate efforts to:

- increase and support the capacity of Aboriginal people in the field of natural resources management (i.e., develop the capacity of people living in communities to engage in proactive, informed research and dialogue);
- assist in establishing research and record-keeping institutions in Aboriginal communities that can obtain and store information pertinent to consultation processes for easy future reference;
- support traditional land use planning processes to generate and develop data and enable consultation;
- support institutions in Aboriginal communities or at the Tribal Council level that are designed and structured to respond to consultation requests (e.g., "consultation committees or departments" that are part of First Nations governments);
- employ trained interpreters where needed so that consultations can also take place in the language of the Aboriginal community; and
- help establish and maintain independent regional "technical advisory/research centres" (e.g., "land use planning technical centres," "mining technical centres," "oil and gas research institutes") that Aboriginal communities can call upon when involved, for example, in consultation dialogues, policy development processes, resource development or conservation initiatives, or forest research.

Wherever possible, Aboriginal youth should be involved in these initiatives – either through hands-on experience in their development or through high school or university outreach programs – to help them acquire the skills they will need to participate effectively in resource planning and management.

STATE OF THE DEBATE

The scope of recommendations regarding Aboriginal peoples was perhaps the single most challenging issue encountered by the Boreal Forest Program. The NRTEE observed the following issues and perspectives in the state of the debate as expressed during the deliberations of the Boreal Forest Program task force and during consultations with government, industry, community, Aboriginal and civil society leaders.

Aboriginal Peoples and the Boreal – Progress and Tensions

Task force members and others consulted agreed that Aboriginal peoples will play a fundamental role in the future of the boreal. As well, there was general support at the task force level for efforts to improve the capacity of Aboriginal groups to participate meaningfully in their regional economies.

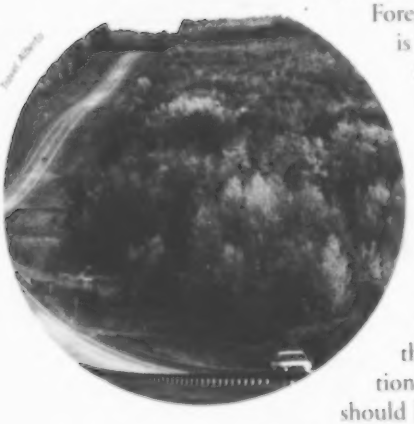
However, there was also recognition that while the constitutional rights of Aboriginal peoples have been affirmed, serious debate continues surrounding the

Aboriginal peoples will play a fundamental role in the future of the boreal. However, there was also recognition that while the constitutional rights of Aboriginal peoples have been affirmed, serious debate continues surrounding the interpretation of treaty rights, and how those rights are translated on the ground.

interpretation of treaty rights, and how those rights are translated on the ground. The NRTEE noted that tensions remain in many parts of the country – between the federal government and provincial governments, and between resource companies and some Aboriginal communities – as to how these rights are to be realized in planning initiatives and operations. This question is particularly challenging in areas such as the working landscape of the boreal, where governments have already granted many rights for resource development. As a result, some Aboriginal peoples have resorted to legal action, blockades and other actions to slow down or halt development when confronted with potential resource projects over which they feel they have no control, whether on treaty lands or areas covered by land claims agreements or negotiations.

Aboriginal Land Claims and Treaty Rights

There was a clear divergence of views over the extent to which land claims and treaty rights should be addressed in the Boreal Forest Program's work. There is no doubt, however, that these matters will become increasingly influential as development pressure on the boreal increases.



The NRTEE heard from many Aboriginal representatives, both at the task force level and through other consultations, that Aboriginal peoples should be in a position of decision-making authority, given their constitutional rights as affirmed by the Supreme Court of Canada. In their view, what happens to the land base of Aboriginal peoples in the boreal is inextricably tied to their social, cultural and economic well-being.

Many Aboriginal peoples and researchers have argued that Aboriginal forest tenures, which are designed to meet the forest needs of Aboriginal communities, are long overdue. Aboriginal peoples want to be responsible for sustainable forest management on their traditional lands. Aboriginal members of the task force also called for much greater attention to developing institutions that involve Aboriginal peoples in decision making. They stated that Aboriginal participation in joint ventures and co-management in some areas of the boreal, though encouraging, is still taking place within institutional contexts that essentially exclude Aboriginal peoples from decisions on how land and resources are allocated.

A majority of task force members felt that resolution of Aboriginal land claims and treaty rights is not a boreal-specific issue, but rather one that cuts across the entire political and social fabric of Canada. The NRTEE also heard that some provinces are particularly uncomfortable with having Aboriginal communities in a position of decision-making authority over natural resource management, given that jurisdiction over the allocation and management of resources is a provincial responsibility.

ENCANA DRILLING RIGS INITIATIVE

In 2001, EnCana Corporation sent out tenders to a handful of drilling companies to solicit competitive bids for the building of a drilling rig. After Precision Drilling was awarded the tender, the First Nations of Heart Lake, Cold Lake and Frog Lake and the Kehewin Cree were approached to partner with Precision.

Each participating First Nation would hold a 12.5% equity position in the drilling rig, with Precision holding the remaining 50% interest. At the same time, EnCana committed to a guaranteed contract worth $12.5 million to utilize the rig for 250 days a year for four years.

Each drilling rig directly employs 15 full-time people and can generate up to another 50 indirect jobs.

This arrangement with Precision Drilling has since provided a prototype for several other deals that EnCana has helped to develop and support. Today, there are a total of seven rigs operating under similar conditions.

To facilitate the drilling rigs initiative, the federal government provided a $1.1-million grant to the First Nations communities to support the venture and help raise capital, while the province provided funding to train rig hands.

Source: **www.encana.com/responsibility/community/ar_drilling_rigs.html**.

The NRTEE has, in past reports, acknowledged that governments and communities need to work together to address the longer-term challenges of land claims and treaty rights. In the end, the Boreal Forest Program task force agreed that there are immediate opportunities to support institutional development, capacity building and business opportunities for Aboriginal peoples, and that these initiatives should not wait for the longer-term resolution of land claims and treaty rights.

ECOSYSTEM-BASED FOREST MANAGEMENT PLAN FOR NITASSINAN (DISTRICT 19)

For more than a decade, the Innu Nation and the Government of Newfoundland and Labrador have been in negotiations concerning the vast pristine boreal forests of Nitassinan. These forests represent one of the key foundations of Innu culture and economy. From the Innu Nation's perspective, protecting the ecological composition, structure and function of these forests, together with their associated cultural values, is a very high priority.

In January 2001, a Forest Process Agreement was reached between the Innu Nation and the Government of Newfoundland and Labrador. This agreement was designed to facilitate full Innu participation in forest planning within central Labrador. Now, over two years later, the parties have completed an ecosystem-based forest management plan for Forest Management District 19.

The management plan attempts to follow an approach based on protecting, maintaining or, where necessary, restoring fully functioning ecosystems at different spatial scales over long time frames. This approach also requires respect for various cultural values while providing for sound economic opportunities within the region.

Source: **www.innu.ca/forest/sec4.htm**.

BOREAL FUTURES: CONCLUDING OBSERVATIONS

4

4 BOREAL FUTURES: CONCLUDING OBSERVATIONS

THE NRTEE'S BOREAL FOREST PROGRAM HAS BEEN A CHALLENGING, THOUGHT-PROVOKING AND HIGHLY WORTHWHILE EFFORT. IT HAS BROUGHT TOGETHER CANADIANS FROM ALL REGIONS OF THE COUNTRY AND ALL PERSPECTIVES TO DISCUSS IN AN OPEN AND FAIR FORUM THE KINDS OF DECISIONS THAT NEED TO BE MADE ABOUT THE FUTURE OF CANADA'S BOREAL. THIS *STATE OF THE DEBATE* REPORT HAS PRESENTED THE RESULTS OF THAT EFFORT.

In conclusion, the NRTEE can make the following observations.

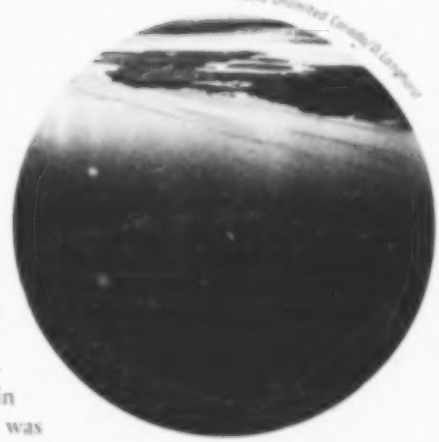
1. Advancing the conservation of natural capital in the boreal in balance with development is an investment by Canadians in their own future.

For a region that accounts for more than half of the land area of the country, the boreal has been slow to gain the attention of Canadians. Recent initiatives by civil society organizations, in cooperation with some companies and Aboriginal groups, have begun to change that perception. These campaigns have drawn attention to the importance of the boreal today and to the decisions that are being made about its future.

Through extensive commissioned research, workshops held with residents of the boreal, consultations across the country and dialogue with the program task force, the NRTEE has come to a fundamental conclusion: that advancing conservation of natural capital in the boreal in balance with development should be seen as a priority investment by Canadians in their future. It is an opportunity Canadians ignore at their peril – one where time may be running out and some choices may have to be forgone. It is an investment that can pay important dividends, such as:

- maintaining the boreal's valuable regional, national and international ecological functions, including its important role in regulating global climate;
- supporting the long-term competitiveness of important resource industries and the viability of communities that depend on them; and
- providing meaningful opportunities for Aboriginal peoples to protect their traditional way of life and to participate in and benefit from resource development.

By any measure, then, the future of the boreal is a challenge worthy of the attention of all Canadians.



2. There are many perspectives on the future of the boreal.

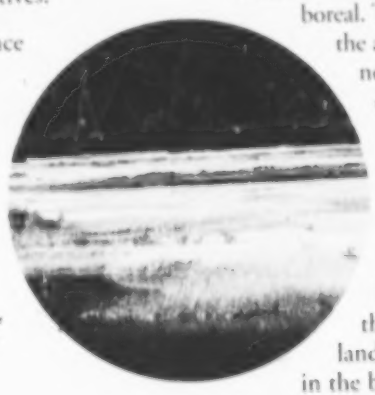
The NRTEE identified a broad consensus among the wide range of government, industry, community and Aboriginal representatives with an interest in the boreal. Consensus was apparent on the following fundamental points:

- that the boreal is highly important to Canada and the world – ecologically, economically and socially;
- that the question of the boreal's future deserves the attention of the most senior political, corporate, Aboriginal and community leaders;
- that a short list of key international and domestic factors will affect the future of the boreal, in particular world commodity prices and trade policies, the impacts of market-driven approaches in innovation and green consumerism, domestic policy trends, Aboriginal involvement and global climate change;
- that immediate opportunities for advancing conservation in the boreal are worth exploring in four general areas: leadership, education and information; fiscal policies; planning and regulatory processes; and Aboriginal involvement; and
- that any effective measures will demand the participation and cooperation of all parties with an interest in the boreal – governments, industry, communities, Aboriginal peoples and civil society organizations.

At the same time, the NRTEE identified a number of areas where differing views prevail and no consensus was found. These areas include:

- the extent to which a number of current regulatory and fiscal measures in place to encourage resource development act as disincentives to conservation in the boreal;
- the likely future trends in the "ecological footprints" of the major resource sectors and the extent to which past trends should be extrapolated into the future;
- the extent to which a broader mix of innovative and even challenging policy measures, such as major tenure/licensing and planning reforms and a richer array of EFR measures, should be applied in the boreal;
- the extent to which broader climate change policy measures, such as emissions trading and other fiscal reforms, should be immediately applied to promote conservation in the boreal; and
- the extent to which fundamental Aboriginal issues such as land claims and treaty rights need to be addressed before Aboriginal peoples can effectively participate in future boreal initiatives.

The scope of these areas of divergence points to the complexity of policy making for the boreal in Canada. There are no simple responses, and there are many different perspectives that must be taken into account. The fundamental concern is that, as yet, there is no shared overall vision of where Canada should be headed with respect to the future of the boreal.



3. The time has come for Canadians to choose.

Without question, the future of the boreal is uncertain. It will be shaped by powerful forces. Some of these forces, such as Aboriginal land claims, are within the control of Canadians. Others, such as climate change and world commodity prices, are external to any nation's borders.

The easier choice is to wait and allow these larger, complex issues to evolve or be resolved, and only then respond to promote the interests of the boreal and the people who live there.

There is no time to wait and be reactive. Decisions made today in Cabinet rooms, corporate boardrooms and community halls will help determine activities in the boreal for years. The time has come for Canadians to think about the future of the boreal and to make their choices.

In the view of the NRTEE, there is no time to wait and be reactive. Decisions made today in Cabinet rooms, corporate boardrooms and community halls will help determine activities in the boreal for years. The time has come for Canadians to think about the future of the boreal and to make their choices.

As the Boreal Forest Program has articulated, there are immediate and practical opportunities for advancing conservation in balance with development in the boreal. These measures can begin to put in place the attitudes, practices and partnerships needed to give Canadian governments, corporations, communities and organizations the flexibility, resilience and motivation to take advantage of whatever boreal future evolves.

Although the focus of the Boreal Forest Program was on the working landscape, the NRTEE also believes that the lessons learned in the working landscape can be applied to other areas in the boreal that are still unallocated and largely untouched by development.

Table 2 summarizes the set of seven recommendations proposed under the four areas of governance. All of the recommendations touch on one or more of the elements of public and private governance – the *how* and *why* of decision making. For example, various recommendations are targeted at improving coordination among jurisdictions and integration across *mandates*, introducing innovative *fiscal and regulatory policy measures*, and *building organizational capacity*.

4. The single most important challenge is leadership.

Perhaps none of the areas of governance is as important, at least in the immediate term, as the question of *leadership*. The success or failure of Canadians' efforts to work for the future of the boreal will be determined, in large part, by how leaders in many sectors – government, industry, communities, Aboriginal organizations and civil society – respond to the boreal challenge.

The NRTEE firmly believes that leadership is the necessary catalyst to take good will and good ideas to the next level in the boreal. This *State of the Debate* report can provide a guide for these leaders. It describes, in a comprehensive and fair manner, the many current perspectives on the boreal – where Canadians agree and disagree. It also presents a set of realistic proposals for action by leaders:

- The first step for Canadian leaders is to declare to Canadians that the future of the boreal is important to the future of their country and the world, and to work toward building a shared vision of that future. This shared vision would be the primary outcome of the national leaders' conference proposed in this report.
- The next step is to take action where possible within each leader's sphere of influence, to build momentum on conservation efforts, gain experience and forge partnerships. A number of the ideas proposed here, such as the boreal Network of Centres of Excellence, and innovative pilot projects on planning and ecological fiscal reform, incorporate this step.
- A third step is for leaders to work together to strengthen the capacity of Aboriginal peoples of the boreal to participate in decisions affecting their future and to respond to the uncertainties that will no doubt characterize that future.

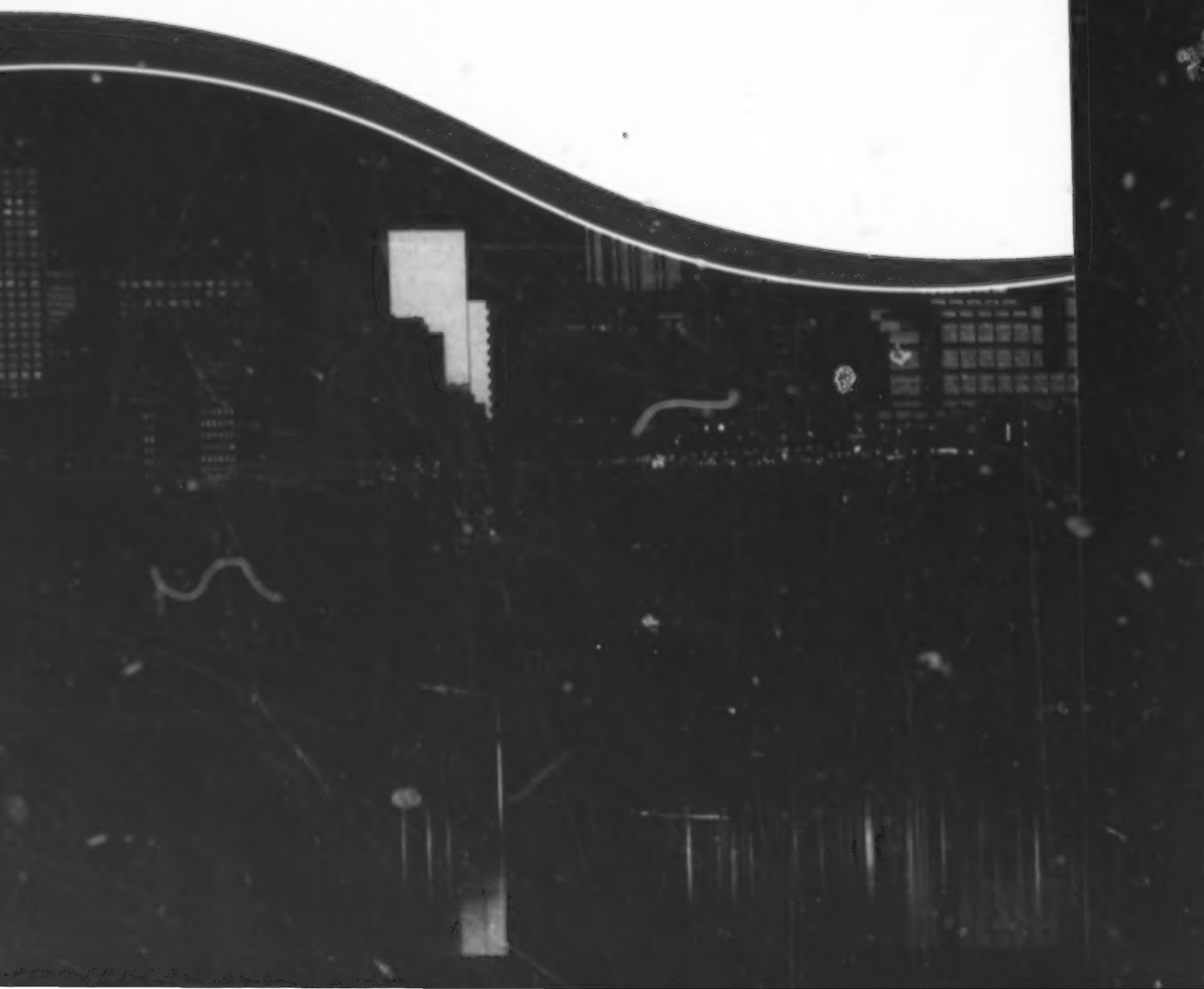
The NRTEE is confident that Canadian leaders will recognize these opportunities and take responsible action – and that the future of the world's boreal will be better because of this.

Leadership is the necessary catalyst to take good will and good ideas to the next level in the boreal.

TABLE 2: SUMMARY OF PROPOSED OPPORTUNITIES FOR GOVERNANCE ACTIONS

GOVERNANCE AREA	DESIRED RESULTS	RECOMMENDATIONS	PRIMARY RESPONSIBILITY
1. Leadership, Education and Information	Canadians understand the environmental, social and economic importance of the boreal, both in Canada and internationally, and share a vision for its future Canada is an international leader in promoting sound conservation of the world's boreal regions in balance with economic and social development Information about the boreal is timely, relevant and easily available to government, corporate, community and other decision makers	1. Convene a national leaders' conference on the future of Canada's boreal	Federal government
		2. Establish a boreal Network of Centres of Excellence	Federal, provincial and territorial governments Other NCE funding partners
		3. Improve the capacity for climate change adaptation in the boreal	Federal, provincial, territorial, Aboriginal and community-level governments Industry Civil society groups
2. Economic Instruments	More resource companies adopt conservation practices in the boreal in response to fiscal incentives	4. Expand the use of fiscal incentives to promote conservation by resource industries in the boreal	Federal, provincial and territorial governments
3. Planning and Regulatory Processes	Planning and management processes relating to the boreal are well coordinated within and across jurisdictions, and effectively integrate multiple uses	5. Strengthen integrated landscape planning and management through innovative approaches	Federal, provincial, territorial, Aboriginal and community-level governments
4. Aboriginal Peoples	Aboriginal peoples are empowered to contribute to, and benefit from conservation and development initiatives in Canada's boreal	6. Strengthen institutional arrangements for more effective engagement of Aboriginal peoples	Federal, provincial, territorial and Aboriginal governments
		7. Support capacity building in Aboriginal communities	Federal, provincial, territorial and Aboriginal governments Industry Civil society groups

APPENDICES



A APPENDIX: SUMMARY OF CASE STUDIES

Abitibi Region (Quebec–Ontario Border) Case Study

EXECUTIVE SUMMARY

The Abitibi region comprises northwestern Quebec and northeastern Ontario. It encompasses a large tract of predominantly forested land that is at or near the northern limit of commercial forest operations in the region. The Abitibi region is also world-famous as a mining centre and boasts many well-known mines and mining companies, such as Noranda, Falconbridge (59% of which is owned by Noranda) and Placer Dome. The area is heavily resource-dependent, and this has created an economic environment in which many jobs are highly paid, employment is declining and there are few opportunities outside the resource-based sectors. Consequently, populations in all major non-Aboriginal communities declined by 8% from 1996 to 2001. In contrast, the population of Aboriginal communities is rising, although the number of residents in these communities is roughly 5% of the regional total.

The Abitibi region has always been resource-dependent. It was on a major fur trade route in the late 17th century, and during the last century it yielded forest products, minerals and hydroelectric power. Forest management has certainly changed throughout this period, with the current approach of sustainable forest management becoming dominant in the last decade. The existing forest represents the net outcome of historical human and natural disturbance, with offsetting forest growth and development processes.

Although the case study area was almost equally split between Quebec and Ontario, many of the observations and recommendations pertain to the case study region as a whole. Perhaps the most striking conclusion is that, although the forest has been industrially exploited for the past century, the forest ecosystem is largely healthy. The main conservation concern in the region is woodland caribou, which is a threatened species under the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) rating system. The caribou is an "umbrella" species, meaning that the act of conserving it simultaneously conserves many other species and values. Caribou are very sensitive to human presence, and their range has been receding northwards and their populations declining as human use of the forest expands and intensifies. Access is a particularly critical factor, improving the ability of natural predators and humans to hunt them and expanding human presence. Development and implementation of an effective caribou conservation strategy would have a dramatic impact on current management and timber harvest levels.

There has been little effort to manage caribou and develop a conservation strategy due to many of the general constraints to conservation in the case study area. The consultants found that there was no joint effort on the part of the two provinces to manage caribou, even though the species has a large range and crosses back and forth between Ontario and Quebec. Only the Lake Abitibi Model Forest has conducted caribou and other landscape-level research in both provinces that has also involved researchers from both provinces. Within Quebec, there is little forest management planning at the landscape level and little conservation effort directed toward caribou. In Ontario, while landscape-level planning approaches have been developed and are being implemented, caribou conservation guidelines have been developed only for the northwest and are not applicable or applied in the northeastern part of the province.

In both provinces, there is an absence of regional land use planning, which would integrate and balance the various uses of the land on a large-scale basis. Such a process would contribute to caribou conservation by leading to the development of a well-planned, multi-purpose road network and the identification of

remote or roadless areas, which could shift over time around the landscape. An integrated regional land use planning process would also consider the cumulative impacts of all users over an extended period of time. Such a process might also improve the cohesiveness of the regional protected areas network, under which less than 3% of the area in the study zone is currently protected. Protected areas ought to form a major component of a sustainable forest management system, and our observation here is that there are too few protected areas in the Abitibi area to serve this purpose. (This statement must be put into context by noting that Ontario's Living Legacy brought the proportion of protected area up to 12% for the province as a whole and that Quebec is in the process of adding additional protected areas, some of which will be in Abitibi; however, the case study area is quite large, hence the observation.)

The development of a caribou conservation strategy would also provide some stimulus to address the lack of resources within the resource management ministries of Quebec and Ontario. This lack of resources, combined with capacity issues in many Aboriginal communities and their disinclination to participate in a resource management framework that many feel does not respect their values and rights, hinders the potential to develop and implement a comprehensive conservation strategy.

While extinction of the caribou is a glaring, imminent ecological threat unless current approaches are overhauled, there are a number of positive trends and developments. Perhaps one of the most significant is the growing importance of forest certification. The larger forest companies in Abitibi are committed to having their operations become certified, and Ontario has recently announced it will require the certification of all licence holders by 2007. This will push both companies and governments alike to adopt more conservation-oriented approaches, although it will also put substantial pressure on provincial governments and small and medium-sized forest companies to pull their weight. In Quebec, the provincial government has signed landmark agreements with the James Bay Cree (to the north of the study area) and a more focused agreement with the Algonquin south of Abitibi. These may serve as precedents and an incentive for First Nations in the Quebec part of the Abitibi region to reach a similar type of agreement. (In Ontario, no agreements of this type have been signed and none appear imminent.)

Alberta-Pacific Forest Industries (Al-Pac) Forest Management Area (FMA) Case Study

EXECUTIVE SUMMARY

The case study was commissioned by the National Round Table on the Environment and the Economy (NRTEE) as part of its Conserving Canada's Natural Heritage: The Boreal Forest program. The overall objective of the case study is to identify fiscal and regulatory barriers to conservation and policy options for conserving natural capital, while recognizing the importance of resource development and other economic and social values for land use in this area.

Part 1: Management Objectives

The specific questions examined in this document are: What key conservation values should be promoted in the Al-Pac FMA? What indicators of natural capital correspond to these conservation values, and what human activities affect these indicators? And, finally, what specific management objectives for land uses in the Al-Pac FMA could be adopted to promote the conservation of natural capital?

Conservation values relevant to the case study area were drawn from the criteria of sustainable forest management identified by the Canadian Council of Forest Ministers. They include biological diversity, ecosystem condition and productivity, soil and water resources, global ecological cycles (e.g., carbon), and economic and social benefits. Potential trends in indicators corresponding to these conservation values were projected using a simulation model initialized with a description of current landscape composition and inputs defining rates of landscape change and resource development in the case study area. These trends are intended to foster an understanding of the challenges involved in achieving specific management objectives that would promote one or more conservation values.

The following is a brief summary of values that would be promoted by each management objective, relevant land use impacts and trends in related indicators.

Maintain total forest cover

This management objective would promote several conservation values, including the conservation of biodiversity, soil resources, water quality and carbon storage. Causes of deforestation in the study area include forestry roads and landings, energy sector clearings (e.g., well sites, pipelines, roads, seismic lines, surface mines), agricultural expansion and climate change.

Forest cover in the study area has declined by approximately 3% over the past several decades due to industrial development primarily in the forestry and energy sectors. Continued industrial expansion over the next several decades would increase the industrial footprint by 150%, with an additional 4% of forest converted to industrial uses.

Maintain the natural disturbance regime

Natural disturbances in the form of forest fires, insect outbreaks and other disturbances have strongly influenced vegetation structure and composition in the study area since the retreat of glacial ice sheets approximately 10,000 years ago. Maintaining the natural disturbance regime within the region would promote the conservation of species that require early successional habitats and fire-created structures. It would also promote ecosystem productivity through the release of nutrients contained in living and dead vegetation. In mature forest stands that are logged, maintaining residual structures in the form of standing dead trees, downed logs and live trees in a manner approximating natural disturbance would promote the conservation of biodiversity.

Although modern fire suppression and control practices are in place, fire is still a major player in the study area, with an average of 0.5% of the forest burning each year. Salvage logging in a portion of these burned stands reduces the legacy of natural disturbance in the future forest by removing standing dead trees and other structures used by many species. During conventional (non-salvage) logging of mature stands by clearcutting, the amount of residual structure remaining is limited, particularly in coniferous-dominated stands.

An implication of future natural disturbance is the difficulty of sustaining a constant supply of wood fibre. A timber supply analysis for Al-Pac's FMA, in which annual fire losses are considered, suggests that current harvest levels would be difficult to sustain for more than 40 to 60 years, after which significant shortages in available hardwood and softwood fibre are projected. Current harvest levels in the case study area were computed to be sustainable only if no wood is lost to forest fires.

Maintain old forest

Old forest stands generally contain the highest number of plant and animal species of all the successional stages in the boreal forest. Maintaining old forest within the range of natural variability would promote the conservation of species that require such conditions. It would also promote the conservation of above-ground carbon, productivity and aesthetic values.

About 10% of the study area is currently covered by older forest stands, or about 40% of the merchantable forest. Under the current forestry regulatory regime, future logging activity would reduce the supply of old forest considerably within the next several decades. The added effects of fire would accelerate this rate of loss, with the combined disturbances of logging and fire reducing the future supply of old forest below the range of natural variability.

Maintain key aquatic and hydrological features

The boreal forest provides numerous water-related services, including the recycling of water to the atmosphere, water filtration and wildlife habitat. Maintaining key aquatic and hydrological features would promote the conservation of biological diversity, soil and water resources. Industrial activities affect surface and groundwater in diverse ways, including by causing local disruption of groundwater flow around oil wells and oil sands mines, roads and forestry cutblocks. Logging can also affect the flow and biodiversity of streams and influence riparian vegetation near cutblocks. Point-source industrial inputs of organic material and toxins have raised concerns over human consumption of fish from the Athabasca River and its tributaries.

Historical and projected trends in water quality at the scale of the entire Al-Pac FMA are unavailable, but approximately 3% of wetland cover in the region has been converted to other land uses during the past several decades. Over the next several decades, it is estimated that an additional 4% of wetlands will be lost, mainly due to oil sands mining; roads are an additional threat to wetland integrity through flow disruption.

Recognize and protect areas of traditional Aboriginal use and value

This management objective is expected to provide socio-economic and cultural benefits for Aboriginal peoples while promoting conservation of natural capital throughout the FMA. Aboriginal peoples form a significant component of the population living within the area of research. Until very recently, Aboriginal peoples pursued a traditional way of life, based largely on hunting, fishing, trapping and gathering activities, and respect for and stewardship of the land were the foundations of their relationship with the forest. Protecting areas of traditional use and value to Aboriginal peoples and involving them in land and resource management decisions would help meet all of the conservation values identified earlier.

The development of conventional oil and gas, oil sands and forestry resources has profoundly affected the traditional way of life of the Aboriginal communities in the case study area. In many areas, traditional land- and resource-based activities can no longer be conducted—partly because some areas are physically impossible to use following development, and partly because of the negative impact of resource extraction on wildlife populations and on water quality and quantity.

Establish areas within the managed forest where human impacts are prohibited or severely reduced

Establishing additional protected areas in the study area would promote the conservation of biological diversity by fostering improved knowledge of the effects of human activities on regional flora and fauna, and by providing refugia for species and natural communities that are sensitive to human activities.

A total of 96,000 ha (1.5%) of the study area is designated as protected under provincial statutes or forestry ground rule designations (e.g., buffer zones). Options for establishing additional protected areas are declining within the Al-Pac FMA as resource development activities continue to reduce the area of undisturbed landscapes. Establishing protected areas in undeveloped landscapes is further complicated by resource allocation decisions that foster competition for land between industrial users and those who promote protected areas. For example, reducing the land base available for timber harvest would potentially reduce the sustainable level of wood harvest. Although reasonable levels of protection are an important stated

societal value, attaining these in the case study area remains challenging because of conflicting historical and current resource allocation decisions.

Reduce linear disturbance density and manage human access

Roads and other linear developments are thought to have many negative ecological effects. Thus, reducing the rate of forest and landscape fragmentation by linear developments in the case study area would promote the conservation of biological diversity. Some wildlife species such as arctic grayling and woodland caribou are particularly sensitive to overharvesting and human disturbance along roads and other access routes such as seismic lines. Managing human access along linear features would help protect such species from further population declines.

There are currently over 100,000 km of linear developments in the Al-Pac FMA, with an average density of 1.8 km/km^2. If forestry activity persists at current levels, and if the energy sector expands at expected rates, the average density of linear developments will increase to over 5.0 km/km^2. This trend would have negative effects on many species. For example, woodland caribou habitat quality in the study area has declined by 23% over the past several decades, with further declines expected if trends in industrial development continue.

Maintain terrestrial carbon stocks and sinks

Carbon storage is a critical component of the global carbon cycle, which regulates the earth's climate. As such, carbon storage is one of the vital ecosystem services provided by the boreal forest. In the boreal forest, most stored carbon is below ground, with peatlands responsible for the accumulation of large quantities of carbon due to slow decomposition rates in cold, saturated soils. The conversion of forested land and peatlands for roads, plant sites, mines, well sites and other land uses increases the rate at which carbon is released into the atmosphere. In addition, forest harvesting shifts the composition of a managed forest from older, carbon-rich stands to young stands that contain less carbon.

Simulated projections suggest that the amount of above-ground and below-ground carbon will decline over the next 50 years by approximately 22 million t. This trend would be accelerated by increased fire rates induced by climate change.

Part 2: Regulatory Barriers and Options

The discussion begins with brief introductory comments in Section 1. Section 2 provides an overview of the objectives and scope of the case study, including the presentation of working definitions for the terms "conservation" and "natural capital," which were included in the NRTEE report entitled *Securing Canada's Natural Capital: A Vision for Nature Conservation in the 21st Century* (2003). For purposes of the case study, the term "regulatory" is broadly defined to include the legal, institutional and policy framework for managing land and resource use within the Al-Pac FMA. Topics addressed in Section 2 include the relationship between the case study objectives and the broader concept of sustainable development, the distinctive constellation of resource values within the Al-Pac FMA, and the constitutional and jurisdictional context for the case study.

Section 3 briefly describes the case study methodology, beginning with the analytical framework that was developed by the project team. Central to that framework is the list of management objectives that could be used to promote the conservation of natural capital within the Al-Pac FMA. (These objectives and the rationale for selecting them are described in Part 1 of the case study report.) This section then describes the research methods (the use of interviews with key individuals and a stakeholder workshop) and discusses the involvement of Aboriginal peoples in the case study. As noted in that discussion, the case study design and the limited time and budget for this project made it difficult to obtain input from Aboriginal peoples.

Section 4 presents a series of nine cross-cutting barriers to the conservation of natural capital in the Al-Pac FMA. Seven of these barriers were identified by the NRTEE in *Securing Canada's Natural Capital*. Two additional barriers were included because of the importance attached to them by interviewees and workshop participants. All of these barriers are cross-cutting because they apply to many of the specific management objectives referred to above. The barriers are:

- lack of political will and accountability on the part of governments;
- inadequate integration of decision making across sectors and land uses, as well as among regulatory processes;
- lack of conservation planning at a landscape level;
- constraints and incentives relating to the resource disposition and tenure systems;

- key stewards are often not "at the table";
- lack of economic benefits and incentives for key stewards;
- lack of information tools to support decision making;
- failure to integrate true costs and benefits of nature; and
- lack of financial resources to support conservation and partnerships.

While many of these barriers are fairly general, they highlight some of the policy "fundamentals" that arguably must be in place for successful implementation of specific management objectives designed to conserve natural capital within a sustainable development framework.

Concerns regarding political will and accountability were of several types. Interviewees and workshop participants highlighted the need for transparency about the fundamental political and economic choices that guide government decision making on land and resource use, and they argued that governments should be accountable for the resulting trade-offs that may affect natural capital. The importance of following through with the implementation of policy directions and recommendations from multi-stakeholder processes was also noted, as was the need for an institutional focal point for accountability. Finally, stakeholders commented on the absence of effective accountability mechanisms in some legislation governing land and resource use.

Many stakeholders identified the lack of effective integration of decision making across sectors and land uses, as well as among regulatory processes, as the primary barrier to conserving natural capital on the working landscape within the Al-Pac FMA. Numerous specific examples of this lack of integration were identified. All of these examples point to the need for integrated landscape management in order to set and achieve landscape-level objectives in a context of multiple activities, competing land use values and significant cumulative effects. Several interviewees and workshop participants argued strongly that this approach must include a new governance model for managing land and resource use within the Al-Pac FMA.

There was also general agreement that the lack of land use planning at the landscape level was a significant barrier to the conservation of natural capital. This barrier was discussed in some detail in the NRTEE report *Securing Canada's Natural Capital*. The Al-Pac FMA case study highlighted specific deficiencies in the applicable planning processes and underlined the importance of planning as an integrative mechanism and a means of managing cumulative effects.

Constraints and incentives relating to the resource disposition and tenure systems in the Al-Pac FMA are also examined in some detail. In particular, the orientation of the tenure regimes to maximizing short-term economic benefits and the resulting lack of flexibility to accommodate other values, including the conservation of natural capital, were noted by stakeholders in relation to both the energy and forestry sectors. Options for reforming the tenure regimes include extending the timelines for resource development in order to facilitate planning and inter-industry co-operation, moving to larger blocks of resource rights with fewer tenure holders, and relaxing the "use it or lose it" requirement that applies to both the forestry and the oil and gas sectors.

The absence of key stewards and other stakeholders from the "table" is a barrier to conserving natural capital that reflects several underlying problems. In some instances, there is no inclusive and transparent decision-making process in which stakeholders can participate (i.e., there is no "table"). Within the Al-Pac FMA, this problem is illustrated by the absence of a comprehensive planning process and the closed nature of government decision making on the issuance of resource rights. Some interviewees and workshop participants also raised concerns about the lack of effective and high-level participation by government in multi-stakeholder forums, linking this deficiency to subsequent problems with the implementation of recommendations from these forums. Finally, the challenge of ensuring full and effective participation by Aboriginal peoples in decision making was noted by many stakeholders. This issue is revisited in a subsequent section.

Interviewees and workshop participants commented in some detail on the lack of information tools to support decision making as a barrier to the conservation of natural capital. The need for additional scientific research to support decision making was noted, as was the existence of some best practices in the area of modelling land use scenarios within the Al-Pac FMA. Stakeholders also commented on the need to ensure that existing information is easily accessible, the importance of linking information to decision making, and the need to incorporate traditional land use studies and the traditional ecological knowledge of Aboriginal peoples into decision making.

Lack of financial resources to support conservation and partnerships was a barrier identified by the NRTEE that resonated with many stakeholders familiar with the Al-Pac FMA. The detrimental impact of government cutbacks on the departments and agencies charged with managing land and resources was widely noted, as was the significant revenue stream accruing to government from resource development. There is a broad consensus that management capacity is not keeping up with the pace of development and that this growing gap places natural capital at risk.

The lack of economic benefits and incentives for key stewards and the failure to integrate the true costs and benefits of nature into decision making are two barriers that were identified by the NRTEE in *Securing Canada's Natural Capital*. Both of these barriers are relevant to the Al-Pac FMA. They are, however, discussed in Part 3 of the case study report, which deals with fiscal issues and the use of economic instruments to conserve natural capital.

Overall, the case study highlights compelling reasons to focus on the regulatory fundamentals in the context of multiple and increasing demands on the land and resource base. The most important general lesson from the regulatory component of the Al-Pac case study is that conservation of natural capital on this type of working landscape is difficult to achieve without the ability to address cumulative effects through integrated landscape management.

Section 5 of this document examines regulatory barriers and policy options that relate to the following eight management objectives:

- maintain total forest cover;
- maintain the natural disturbance regime;
- maintain old forest;
- maintain key aquatic and hydrological features;
- recognize and protect areas of traditional Aboriginal use and value;
- establish areas within the managed forest where human impacts are prohibited or severely reduced;
- reduce linear disturbance density and manage human access; and
- maintain terrestrial carbon stocks and sinks.

In each case, a number of regulatory barriers to progress are identified and policy options suggested. The level of detail contained in these sections cannot easily be captured in an executive summary, so readers are referred to Section 5 itself for specifics.

Section 6 presents areas for additional research and analysis. All of the policy options surveyed in this document could be the subject of more detailed examination in order to generate specific proposals for legal, institutional and policy reform. Additional work could also focus on the potential for using specific federal and provincial legislation to conserve natural capital.

Part 2 concludes by noting that the case study findings are relevant not only to the Al-Pac FMA, but also to the boreal forest as a whole. There is clearly considerable potential for regulatory reform that would promote the conservation of natural capital within the case study area. The Al-Pac FMA also offers decision makers and stakeholders in other parts of the boreal forest an opportunity to look ahead to a scenario of intense, multiple and sometimes competing land uses and values. The lessons from this case study thus suggest how legislation, policies and land use practices could be modified throughout Canada's boreal forest in order to promote the conservation of natural capital within a sustainable development framework for managing land and resource use.

Part 3: Fiscal Barriers and Options

Natural capital includes resources such as minerals, timber, and oil and gas, which provide the raw materials used in the production of manufactured goods, as well as land and water resources that support non-market values such as recreational opportunities, biodiversity and ecosystem services. The methodology for this part of the report consists of three components. First, the economic and policy literature was reviewed to generate a list of fiscal mechanisms that have been applied globally to protect forest lands. The list was then evaluated in order to focus on instruments that would be suitable to the boreal forest context: instruments had to be suitable to the ecological system and relevant sectors, as well as compatible with existing institutions (such as property right systems). Stakeholder interviews were conducted to obtain feedback on challenges facing land managers in managing for conservation values, ideas for policy reform and incentives that

would help land managers achieve conservation objectives, and the acceptability of alternative fiscal reforms. Further stakeholder input was obtained from the case study workshop held in Fort McMurray on May 3, 2004.

The main findings of this part of the report are summarized below. Because the provincial government has jurisdiction over most land and resources within the Al-Pac FMA, the report focuses on provincial fiscal barriers and opportunities. Note that many of the opportunities discussed below, such as tradable development rights, are applicable beyond the boundaries of the Al-Pac case study and will also increase protection of existing boreal forest against encroachment by the agricultural fringe.

Barriers

- The Alberta government business planning model promotes the sector-specific mandates of individual departments rather than maximizing the potential value of forest land.
- The tenure and disposition system for allocating resource rights on public lands generates externalities[1] between sectors and does not incorporate the value of natural capital.
- FMA agreements have many restrictions that lead to inefficient use of forest lands and reduce Al-Pac's ability to manage for natural capital. These include stumpage charges, adjacency restrictions, appurtenancy clauses, use-it-or-lose-it requirements, and the sustained-yield principle, which underlies calculation of the annual allowable cut.
- Energy sector barriers include taxes and subsidies that accelerate the exploration and development of energy resources, petroleum and natural gas lease requirements, and a lack of charges for access to water.

Opportunities

- Natural resource accounts and a common set of sustainability indicators managed by all government departments could be used to improve the business planning model in Alberta.
- Increased rights to forest resources other than timber would enhance management for non-timber values on public lands.
- Transferable development rights could be used to implement forest or habitat loss thresholds in the boreal forest.
- Carbon credits could maintain carbon balances and reduce loss of forest cover.
- Conservation easements could be used on public lands to maintain habitat.
- Forest investment tax credits could be applied to forest investments by any sector.
- Access and user charges for non-decommissioned roads could reduce forest fragmentation and species interactions related to human access.

1 *An externality is a side-effect or consequence that affects other parties without this being reflected in the cost or price of the goods or services received.*

Muskwa-Kechika Case Study

(Northeastern British Columbia and adjacent areas of Yukon and the Northwest Territories)

EXECUTIVE SUMMARY

The Muskwa-Kechika case study region (pronounced musk-quah ke-chee-kah) was defined to include the boreal forest of northeastern British Columbia and adjacent areas of southeastern Yukon and southwestern Northwest Territories (Figure 1). This region includes the 6.4-million-ha Muskwa-Kechika Management Area (M-KMA), located in northeastern British Columbia west of the communities of Fort St. John and Fort Nelson. The M-KMA is unique because it represents the first legislated example of conservation biology in action and provides a new model for conservation planning and design. As described more fully in Section 2, the management plan for the M-KMA explicitly balances resource management with conservation.

The NRTEE specified that the M-KMA case study objectives defined above were to be achieved as follows:

- review relevant legislation, policies and information, and interview knowledgeable regional and external stakeholders to develop a draft plain-language case study summarizing real and perceived conservation barriers, best practices and incentives;
- participate in a multi-stakeholder workshop to critique and add to the Muskwa-Kechika case study analysis. Workshop participants (Case Study Appendix 3) would also be asked to name key issues that should be carried forward and examined in more detail in the third phase of the program;
- revise the draft case study to incorporate input provided by participants in the multi-stakeholder workshop; and
- participate in the NRTEE's boreal forest task force meeting to be held in Ottawa on June 29, 2004, to present and verify case study findings.

Literature Review

Primary research using existing literature, land use plans, resource development policies, etc., was undertaken to identify relevant legislation, regulatory frameworks and policies governing the M-KMA and surrounding area. The initial research was completed through electronic and physical means to acquire relevant land use plans, legislation, regulations and policies.

Interviews

The literature review was supplemented by structured interviews with land and resource managers in Victoria and Fort St. John to identify materials that might not be available through desktop research efforts. These managers represented the British Columbia Oil and Gas Commission (OGC), British Columbia Ministry of Energy and Mines (MEM), British Columbia Ministry of Forests (MOF), British Columbia Ministry of Sustainable Resource Management (MSRM) and British Columbia Ministry of Water, Land and Air Protection (MWLAP). Representatives of the Yukon Ministry of the Environment (YMOE) and Energy, Mines and Resources were also contacted.

In addition, Aboriginal and stakeholder representatives were interviewed to determine the perspectives of different resource users regarding decision-making processes and structures established to address conservation and resource development objectives (Case Study Appendix 2).

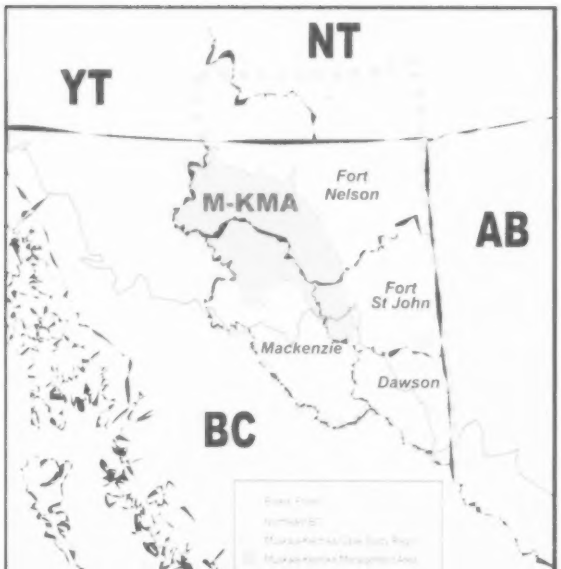
A structured interview form was developed (Case Study Appendix 1) based on (1) the consultants' knowledge of the area, the issues, and policy and legislated decision-making processes and (2) information gathered in the primary research for the case study. The questions were designed to elicit information in the following areas:

- the current legislative and policy framework of the M-KMA;
- regulatory and fiscal policies that have been used to remove barriers to conservation in the M-KMA, northeastern British Columbia and adjacent areas of Yukon;
- the effectiveness of these policies in removing barriers to conservation in the M-KMA, northeastern British Columbia and adjacent areas of Yukon; and
- M-KMA governance issues and how they relate to key conservation issues, themes, goals and objectives.

Multi-stakeholder Workshop

The literature review and interviews were supplemented with feedback from a multi-stakeholder workshop hosted by the NRTEE in Fort St. John on May 6, 2004. Approximately 60 people (Case Study Appendix 3) attended a full day of presentations and round table discussion of the preliminary analysis completed by the consultants. Participants included representatives from Aboriginal groups; academe; local communities; federal, territorial and provincial governments; various industry sectors; and non-governmental organizations.

FIGURE 1: THE MUSKWA-KECHIKA CASE STUDY REGION.



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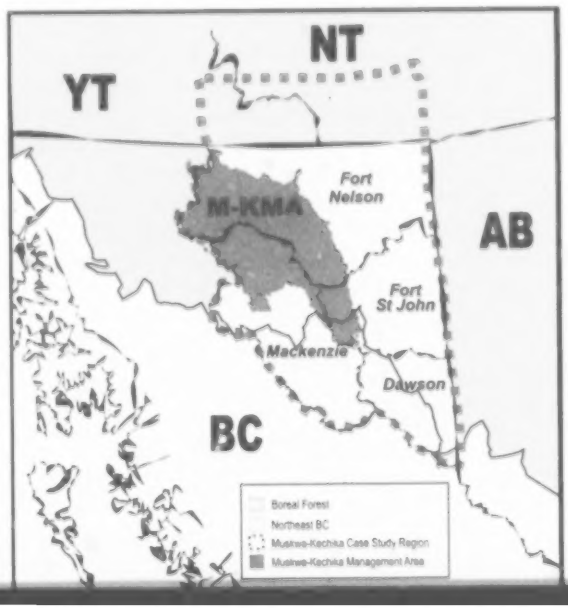

B APPENDIX: PROGRAM PARTICIPANTS

THE NRTEE EXTENDS ITS SINCERE APPRECIATION TO ALL WHO ASSISTED WITH THE BOREAL FOREST PROGRAM, PARTICULARLY TOM SHILLINGTON, WHO CONSOLIDATED ALL THE WORK UNDERTAKEN BY THE TASK FORCE OVER THE COURSE OF THE PROGRAM TO DRAFT THE PRESENT STATE OF THE DEBATE REPORT.

Note: This program was carried out over a number of years, and some participants' titles/organizations may have changed during that time.

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AL-PAC FOREST MANAGEMENT AREA MULTI-STAKEHOLDER WORKSHOP

– Fort McMurray, AB, May 3, 2004

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NRTEE PRESENTATIONS TO GROUPS

October 24, 2003 – Ottawa, ON
North American Bird Conservation Initiative –
NRTEE Presentation

November 16, 2004 – Ottawa, ON
Sustainable Forest Management Network Annual
General Meeting – NRTEE Presentation

January 11, 2005 – Ottawa, ON
National Aboriginal Forestry Association –
NRTEE Presentation at Workshop

January 24–25, 2005 – Saskatoon, SK
Sustainable Forest Management Working
Group of the Canadian Council of Forest
Ministers – NRTEE Presentation

April 4, 2005 – Victoria, BC
Federal, Provincial and Territorial Biodiversity
Working Group – NRTEE Presentation

C APPENDIX: SUMMARY OF RECENT CANADIAN INITIATIVES RELATED TO THE BOREAL

Federal, Provincial, Territorial and Intergovernmental Initiatives

Federal, provincial, territorial and intergovernmental initiatives in the area of boreal conservation tend to fall into three broad categories: work relating specifically to the boreal ecosystem, work relating more generally to Canadian forest protection, and work relating to global warming that may have significant implications for boreal conservation. Recent and ongoing projects are summarized below.[1]

SENATE SUBCOMMITTEE ON THE BOREAL FOREST REPORT – *COMPETING REALITIES: THE BOREAL FOREST AT RISK*

In 1999, the boreal forest subcommittee of the Senate Committee on Agriculture and Forestry published the landmark report *Competing Realities: The Boreal Forest at Risk*.[2] The report proclaimed that the global boreal forest ecosystem was "under siege," that Canada's boreal forest was "at risk" from climate change, overcutting and the cumulative impacts of resource development, and that Canada's existing management regime was insufficient to address the numerous human demands on the forest.

Competing Realities included numerous recommendations for conserving the boreal. According to a recent report from the Canadian Boreal Initiative, however, little progress has been made on those recommendations.

CANADIAN COUNCIL OF FOREST MINISTERS (CCFM) INITIATIVES

The CCFM was established in 1985 to bring public attention to forest issues, stimulate forest policy development, provide leadership in forest management, and set the overall direction for the sustainable management of Canada's forests. The CCFM has sponsored the development of several national forest strategies. The 1992 strategy, entitled Sustainable Forests: A Canadian Commitment, called, among other things, for the development of "criteria and indicators" of sustainable forest management. In 1995, the CCFM published a Canadian framework of six criteria and 83 indicators, and has since developed an implementation plan to report on a core set of indicators and published several progress reports.

Besides its work on criteria and indicators, the CCFM has initiated 10 projects addressing a wide range of forest-related topics, including forest inventories, science and technology, information dissemination, Aboriginal forestry and forest certification.

Among the CCFM's initiatives is Forest 2020, which the CCFM touts as an "innovative approach" to simultaneously accomplishing the objectives of increasing forest conservation and community benefits from forest resources while ensuring continued growth of the forest industry. This initiative led to the CCFM's adoption, in 2002, of a number of objectives: intensive timber harvesting in previously harvested or second growth forests, scientifically and socially acceptable forest ecosystem conservation, and community self-sufficiency and stability.

The Sustainable Forest Management Working Group of the CCFM has been tasked with examining the boreal region and with developing a common vision and approach to boreal planning and management.

NATIONAL FOREST STRATEGY

The National Forest Strategy, a broadly based public initiative made up of governments and non-government organizations, came together in the early 1980s to set a vision for sustainable forest management in Canada. Working through the CCFM, this initiative developed successive national forest strategies by consulting the public on the state of the forest and its future.

These consultations also led to the creation of the National Forest Strategy Coalition, the body that now oversees the implementation of the National Forest Strategy and whose members – government and non-government organizations – work together toward the goal of a sustainably managed forest.

The 2003–08 strategy confirms Canada's collective commitment to continue to be a global leader in sustainable forest management. It proposes a vision and challenges all Canadians to implement the actions identified in it.

The current strategy has eight key themes:

- ecosystem-based management;
- sustainable forest communities;
- rights and participation of Aboriginal peoples;
- forest products benefits;
- knowledge and innovation for competitiveness and sustainability;
- the urban forest and public engagement in sustainability;
- private woodlots' contribution to sustainability; and
- reporting and accountability.

WESTERN BOREAL CONSERVATION INITIATIVE (WBCI)

The WBCI was launched in April 2003 through Environment Canada to promote an interjurisdictional focus on the boreal forest. The WBCI is a multi-partner initiative that seeks to facilitate conservation and protection of western boreal forest ecosystems and their biodiversity, to support sustainable development of natural resources, and to provide a foundation for a future national initiative.

The WBCI has entered into partnerships with the forest and energy industries, Aboriginal groups, environmental non-government organizations, provincial governments, and universities and other research institutions. Partners include the Sustainable Forest Management Network, the Alberta Biodiversity Monitoring Program and the Cumulative Environmental Management Association.

The WBCI delivers knowledge, advice and action relevant to managing boreal forests for biodiversity. Key projects under development include:[4]

- a national boreal bird monitoring program;
- a national boreal bird habitat predictive modelling project;
- research on the impacts of human and natural disturbance on boreal birds (including the individual and cumulative impacts of industrial activity); and
- policy analyses to support conservation and local benefits from boreal forests.

CANADIAN BIODIVERSITY STRATEGY

The Strategy's primary goals are to promote the conservation of biodiversity and the sustainable use of biological resources. The Strategy also seeks to develop incentives and legislation, information gathering and educational programs to support these goals. In 1997, the Canadian Forest Service developed a three-year action plan for contributing to the Canadian Biodiversity Strategy. The plan identified several then-current initiatives, including the Model Forests Program and CCFM programs. The plan also proposed projects involving scientific and policy research to promote biodiversity in Canada's forests.

CANADA'S PLAN FOR MEETING ITS KYOTO PROTOCOL COMMITMENTS

Canada's boreal forest is a significant storehouse of greenhouse gases (GHGs), so reduction of the forest base may have substantial implications for global warming. Likewise, Canada may have to account for GHGs released through deforestation in meeting its GHG reduction targets under the Kyoto Protocol, which Canada ratified in December 2002. Although the federal government has not yet adopted a final plan for achieving its GHG emission reduction targets under the Protocol, it has identified forest conservation and improved forest management as among the tools that may be needed to meet those targets. However, further research is necessary to confirm the overall importance of forest conservation and management in meeting Canada's Kyoto obligations.

QUEBEC COMMISSION FOR THE STUDY OF PUBLIC FOREST MANAGEMENT

Quebec recently undertook a major independent public review of forest management, much of it relevant to the boreal region.[5] The Commission for the study of public forest management in Quebec (known as the Coulombe Commission) focused on the economic, environmental, social and regional aspects of Quebec's forests. The Commission recommended that:

- the province reduce allowable cutting levels by 20%, in response to past over-harvesting;
- a new position of chief forester for the province be established to oversee forest management activities in the province;
- Quebec move away from managing forests primarily for wood production and focus instead on ecosystem-based management, recognizing multiple users and benefits;

- 12% of the province's boreal forest be protected;
- all public forest management units in the province be certified or engaged in a certification process "to an internationally recognized standard" by the year 2007; and
- the province support certification efforts by eliminating the co-management of lands by a multitude of licence holders in order to give responsibility for planning and management to one single entity.

Civil Society Organizations

Parts of the Canadian boreal forest have long been the focus of conservation efforts by local and national civil society organizations. However, in recent years, this focus has increased substantially and taken on a more national or boreal ecosystem–wide approach with the influx of significant charitable funding from the United States. That funding led to the creation of the Canadian Boreal Trust, which has evolved into the Canadian Boreal Initiative. This initiative in turn has channelled funding to other Canadian organizations that have thus been able to step up their boreal conservation efforts. The following account summarizes how various Canadian civil society organizations are working at the national or multi-jurisdictional level to conserve the boreal or Canadian forests more generally.

BOREAL FOREST NETWORK AND TAIGA RESCUE NETWORK

The Boreal Forest Network is an organization of environmentalists, Aboriginal peoples and scientists concerned with the protection and sustainable use of the boreal forest. It is the North American affiliate of the international Taiga Rescue Network, founded in 1992. The Taiga Rescue Network's mission is to ensure "the protection, restoration and the sustainable use of the boreal forest throughout the globe." It is above all a coordination centre, providing guidance and ensuring skill sharing, information exchange and coordination. Its two stated goals are to:

- build capacity and support for front-line boreal Aboriginal peoples by collaborating on culturally appropriate projects to protect traditional territories; and
- strengthen the Network's outreach as it coordinates and communicates to a broader cross-section of society the importance of protecting, restoring and maintaining the biodiversity of the world's remaining circumpolar boreal forest.

CANADIAN BOREAL INITIATIVE (CBI)

The CBI was established in February 2003 to build on earlier work by the Canadian Boreal Trust, created in 2001 with significant funding from the U.S.-based Pew Charitable Trusts through Ducks Unlimited. The CBI's major donor is Pew, which in March 2003 approved funding in the amount of $4.5 million over one year. The CBI is working with, and providing pass-through funds to, a wide range of conservation organizations.

The CBI also works with First Nations, industry and other interested parties to link science, policy and conservation activities in Canada's boreal forest. Recent activities include preparing a progress report on government action in implementing the Senate Subcommittee's report *Competing Realities: The Boreal Forest at Risk*;[4] partnering with the Canadian Parks and Wilderness Society in the Boreal Rendezvous (an awareness-raising initiative); conducting public opinion research on Canadians' support for boreal forest conservation; concluding an agreement with the University of Alberta to establish the BEACONS project to undertake a series of science activities in support of boreal forest conservation; and, in collaboration with the Boreal Songbird Initiative, commissioning a report on the importance of Canada's boreal forest to land birds.

NATIONAL INTEGRATED LANDSCAPE MANAGEMENT COALITION (ILMC)

The National ILMC, led by Wildlife Habitat Canada, is a consortium established to advance and accelerate integrated landscape management in Canada by influencing key decision makers in the development of appropriate policies, practices and tools. It is made up of representatives from federal and provincial government agencies, academic and research institutions, conservation organizations, natural resource sectors (energy, mining and forestry), and anglers and hunters. The coalition has proposed the following activities:

- undertaking a survey and analysis of Canada's current capacity to carry out landscape management, to determine current obstacles, opportunities and needs;
- convening a national workshop involving researchers, land and resource planners and developers, and policy makers to determine the current understanding of ecological thresholds in relation to land use and resource use and to develop a research program to enhance understanding of ecological thresholds;

- continuing to communicate the requirements of integrated landscape management to key stakeholders and to build awareness and support for landscape management across Canada;
- establishing and promoting demonstration sites; and
- establishing a network of individuals with expertise and interests in integrated landscape management.

CANADIAN PARKS AND WILDERNESS SOCIETY (CPAWS)

In 2001, CPAWS launched a campaign to protect Canada's boreal forests from coast to coast. Its goals are to keep intact forests that are in a predominantly wild state and to establish a network of protected areas, with functional, multi-species habitat linkages, for forests that have already been fragmented. Besides its work at the national level, many of CPAWS' individual chapters are working on province-wide or local boreal protection campaigns.

DUCKS UNLIMITED CANADA (DUC)

DUC is working with governments, industry, First Nations and Aboriginal groups, academic institutions, foundations and conservation organizations to help establish a national boreal conservation network that includes ecosystem-based sustainable development, world-leading best management practices, and an extensive network of large, wetland-rich protected areas. DUC's Western Boreal Program is actively pursuing planned conservation of water, wetlands and associated upland habitat in the western boreal forest. The program has several components:

- an inventory of wetlands and uplands – involving a sophisticated earthcover mapping program that defines and describes the wetland habitat;
- an assessment of water bird use of the boreal wetland habitat – involving an inventory of water birds through stratified data collection and predictive modelling at the regional level; and
- regional water chemistry surveys, riparian bird surveys and invertebrate surveys at selected sites.

GREENPEACE

One of Greenpeace's four current campaigns focuses on Canada's boreal forest. The group is calling on both the federal and provincial governments to place an immediate moratorium on the most endangered portions of Canada's boreal forest until proper conservation planning can be completed and protected areas and transition funding for affected communities are established.

WORLD WILDLIFE FUND (WWF) CANADA

WWF has done much work on forestry issues, such as sustainable forest management, clear-cutting and establishing protected areas. Recent efforts include working with industry on certification issues. WWF is developing regional independent forest certification standards in Ontario and British Columbia, and is engaged with the forest industry in Quebec to establish a network of protected areas in the province's boreal forest.

SIERRA CLUB OF CANADA

One of the Sierra Club of Canada's primary programs is forest protection. The Club's main efforts in this program relate to forest certification, forest tenure reform, global warming and international networking.

ALBERTA CENTRE FOR BOREAL STUDIES

The Alberta Centre for Boreal Studies was initiated by the Canadian Parks and Wilderness Society (Edmonton Chapter) to provide reliable, up-to-date information to the public about the ecology and management of boreal forests in western Canada. The Centre has published several reports documenting industrial activities in the western boreal and their cumulative impacts.

GLOBAL FOREST WATCH (GFW)

The GFW program was started by the World Resources Institute in 1997. Its overall objective is to infuse transparency and accountability into the decision-making processes that determine how forests are managed and for whom. It does so by:

- tracking the actors (corporations, government agencies, individuals) that are sponsoring development activities;
- mapping out where these actors are operating; and
- monitoring the degree to which these actors are following national and local management laws and regulations.

GFW has launched the Pan-Boreal Mapping Initiative, an effort to map the last remaining wildlands in the boreal forest. This collaborative effort between civil society organizations and academic institutions in

five countries is using high-resolution satellite images to establish how far into the boreal forest logging and other industrial developments have advanced. A report on Canada's forests entitled *Canada's Forests at a Crossroads: An Assessment in the Year 2000* was released in February 2001.[5] Global Forest Watch Canada is an affiliate of GFW.

DAVID SUZUKI FOUNDATION

One of the David Suzuki Foundation's four program areas relates to forests and wildlands. The focus is on promoting sustainable logging and land use practices in British Columbia's rainforests and Canada's boreal forests.

CANADIAN NATURE FEDERATION

As part of BirdLife International, a global coalition of bird and nature conservation organizations, the Canadian Nature Federation recently released a public call for Canada to take "immediate steps" to protect its boreal forest through land use planning, sustainable development practices, and a network of parks and other protected areas in the boreal. The Federation's own boreal-related work appears to be focused on the latter of these three approaches.

Industry Initiatives

CANADIAN ASSOCIATION OF PETROLEUM PRODUCERS (CAPP)

CAPP has prepared a report for its members, *Evolving Approaches to Minimize the Footprint of the Canadian Oil and Natural Gas Industry*,[6] identifying new and evolving innovative practices and technologies that reduce the footprint of oil and gas activities in forested regions of Canada. The report complements CAPP's ongoing Stewardship Initiative and establishes a set of tools that CAPP companies can apply to minimize both project-specific impacts and regional cumulative effects.

FOREST PRODUCTS ASSOCIATION OF CANADA (FPAC)'S BOREAL STEWARDSHIP TASK FORCE

Through its Boreal Stewardship Task Force, consisting of FPAC member companies and provincial association partners across the country, FPAC is accelerating activities to improve collective knowledge regarding boreal forest sustainability and to advance implementation of best practices. FPAC is committed to promoting and demonstrating leadership in the forest industr achieving substantive progress in sustainable for management and continual improvement of pr on the ground.

MINING ASSOCIATION OF CANADA (MAC)'S TOWARDS SUSTAINABLE MINING INITIATIVE

In 2004, MAC established its Towards Sustaina Mining stewardship initiative. The goal of the initiative is to sustain the industry's role as a lead economic player in Canada by increasing publi trust in its ability to manage the environmental social issues important to Canadians. The initia was initially based on four areas: tailings manage energy management, external outreach to stakeh and crisis communications. Over the longer term initiative is expected to deal with Aboriginal rela closure planning and reclamation, and communi development.

FOREST STEWARDSHIP COUNCIL (FSC) CANADA BOREAL STANDARD

The FSC is an international not-for-profit organiz founded in 1993 to support environmentally appropriate, socially beneficial and economicall viable management of the world's forests. It sup the development of national and regional stand to be used by third-party certifiers or certificat bodies to evaluate whether a forest is being wel managed. With its head office in Bonn, Germa it is governed by an elected board consisting of representatives from industry; environmental, s and labour groups; Indigenous peoples' organiz and other interested parties. Through a Boreal Coordinating Committee, FSC Canada has deve an FSC National Boreal Standard that reflects th unique cultural, social, environmental and econo realities of the boreal forest.

Academia

SUSTAINABLE FOREST MANAGEMENT NETWORK (SFMN)

The SFMN is one of Canada's Networks of Ce of Excellence. Since 1995, the SFMN has been ducting interdisciplinary research into sustainab forest management practices, policy and institu Based at the University of Alberta in Edmonton it operates with a $7-million annual budget and

involves 100 researchers and 200 graduate students at Canadian universities. It has established partnerships with provincial governments, forest industries, First Nations and civil society organizations.

National Initiatives Addressing Information Needs

A number of important initiatives are underway in Canada to address data and information challenges. Many have direct applicability to planning and management needs in the boreal.

CANADIAN INFORMATION SYSTEM FOR THE ENVIRONMENT (CISE)

Under Environment Canada's coordination, CISE seeks to provide Canadians with timely access to relevant, credible, integrated environmental data and information that can facilitate decision making. CISE works through a cooperative network of government agencies, the private sector, academia, non-government organizations, Aboriginal peoples and others.

CISE is being developed in phases with a focus on building partnerships and advancing the architecture behind the system. A key component of the system is its environmental reporting and indicators. In its initial phase, CISE is concentrating on providing national datasets to support the indicators proposed by the NRTEE. The NRTEE indicator priorities are air quality, water quality, biodiversity and climate change.

The proposed NRTEE indicators are meant to be presented alongside conventional economic indicators such as gross domestic product and employment rates to encourage a more holistic approach to decision making at the highest levels. Statistics Canada will report on the NRTEE indicators in an expanded system of national accounts.

CISE will also support the indicator series developed by Environment Canada's National Indicators and Reporting Office. This established set of indicators includes urban air quality, water use, protected areas and measures of human activity such as energy consumption and transportation.

NATIONAL FOREST INFORMATION SYSTEM (NFIS)

Under the CCFM, Canadian Forest Service researchers at the Pacific Forestry Centre, in cooperation with provincial and territorial partners and Canada's GeoConnections program, are working on a framework to access and report information on Canada's forested landscapes. The NFIS (the data storage and publication mechanism for the National Forest Inventory) is based on international standards and has been developed with the need for data coherence in mind.

The NFIS is expected to include information on, for example, forest cover (including species, age, volume and disturbance history), transportation infrastructure, silviculture activities, protected areas, relief and administrative boundaries.

NATIONAL LAND AND WATER INFORMATION SERVICE (NLWIS)

The NLWIS is an information management initiative under the environment chapter of Canada's Agricultural Policy Framework. Located in Agriculture and Agri-Food Canada, the NLWIS is designed to be a coordinated national service providing access to detailed geospatial information and interpretive models to support local and regional land use decision making. When fully implemented, it will be a partnership linking information on land, air, soil, water, climatic and biodiversity held by federal, provincial, territorial and municipal governments, non-government organizations and the private sector.

CCFM CRITERIA AND INDICATORS

The CCFM Criteria and Indicators are a science-based framework for defining and measuring Canada's progress in the sustainable management of its forests. They include six criteria and 83 indicators. The indicators reflect an approach to forest management that is based on:

- the need to manage forests as ecosystems in order to maintain their natural processes;
- the recognition that forests provide a wide range of environmental, economic and social benefits to Canadians;

- the view that an informed, aware and participatory public is important in promoting sustainable forest management; and
- the need for forest management to evolve to reflect the best available knowledge and information.

CANADIAN COUNCIL ON ECOLOGICAL AREAS AND THE CANADIAN CONSERVATION AREAS DATABASE

The Canadian Council on Ecological Areas is a national non-profit organization supported by governments, non-government organizations, industry and researchers. It is developing nationally consistent criteria for protected areas that will be used to update and standardize the Canadian Conservation Areas Database.

The Canadian Conservation Areas Database is a digital database containing a compilation of the conservation areas created and managed by numerous government and non-government agencies across Canada. It has involved the cooperation of federal, provincial, territorial and non-government data managers and is provided for public use at no charge via the GeoGratis data distribution service of Natural Resources Canada.

ALBERTA BIODIVERSITY MONITORING

The Alberta Biodiversity Monitoring Program expects to establish more than 1,500 sites spaced at 20-km intervals across Alberta. Common data collection protocols will be employed in order to monitor a broad array of animal and plant species. The program is intended to collect data for 100 years and will be made freely available to the public.

SELECTED BIBLIOGRAPHY

NRTEE Reports

NRTEE. 2003. *Environment and Sustainable Development Indicators for Canada.*

———. 2003. *Securing Canada's Natural Capital: A Vision for Nature Conservation in the 21st Century.*

———. 2002. *Toward a Canadian Agenda for Ecological Fiscal Reform: First Steps.*

NRTEE Case Studies

ArborVitae Environmental Services, Boldon Group, A. Boursier, L. Johnson and T. Stubb. 2004. *A Case Study of Conservation in the Abitibi Region* (Quebec–Ontario Border).

Farr, D., S. Kennett, M. Ross, B. Stelfox and M. Weber. 2004. *Al-Pac Case Study.*

R. McManus Consulting Ltd. and Salmo Consulting Inc. 2004. *Muskwa-Kechika Case Study (Northeastern British Columbia and adjacent areas of Yukon and the Northwest Territories).*

NRTEE Background Studies

Lee., P. and Global Forest Watch. 2004. *Boreal Canada: State of the Ecosystem, State of Industry, Emerging Issues and Projections.*

Morse, B., J. Benidickson, S. Elgie, R. Flewelling, M. Mallet and K. Loon. 2005. *Aboriginal Issues in Canada's Boreal Forest.*

Nelson, H., and I. Vertinsky. 2005. *An Assessment of Policy Measures Designed to Achieve Sustainability in the Boreal: Final Report.*

Ross, M., and M. Wenig. 2003. *Background Report on the Boreal Forest.*

Tittler, R. 2004. *Conservation and Sustainable Development in the International Boreal Forest: A Comparative Study of Regulatory and Fiscal Policy in Scandinavia, Russia and Alaska.*

Government of Canada Publications

Canadian Environmental Assessment Agency. n.d. *Considering Aboriginal traditional knowledge in environmental assessments conducted under the Canadian* Environmental Assessment Act – Interim Principles. Available at: **www.ceaa-acee.gc.ca/012/atk_e.htm**.

Canadian Forest Service. 1999. *Climate change and forests: Context for the Canadian Forest Service's science program.*

———. 1998. *Forest sector table foundation paper.* Mimeograph. Ottawa, September 28.

Commissioner of the Environment and Sustainable Development. 2004. *Report of the Commissioner of the Environment and Sustainable Development to the House of Commons – 2004.*

Environment Canada. 1999. *The Canada Country Study (CCS) – Climate Change Impacts and Adaptation in Canada: Highlights for Canadians.*

Environment Canada. 1996. *The State of Canada's Environment – 1996,* "Glossary of Selected Terms." Available at: **www.ec.gc.ca/soer-ree/English/SOER/1996report/Doc/1-10-1.cfm**.

External Advisory Committee on Smart Regulation. 2004. *Smart Regulation: A Regulatory Strategy for Canada.*

Federal-Provincial-Territorial Stewardship Working Group. 2003. *Canada's Stewardship Agenda: Implementation of Priority Actions.* Environment Canada.

Finance Canada. 2005. *Budget 2005 – Delivering on Commitments,* Chapter 5: "Moving Toward a Sustainable Environment and Sustainable Communities." Available at: **www.fin.gc.ca/budget05/bp/bpc5e.htm**.

Hauer, G., T. Williamson and M. Renner. 2001. *Socioeconomic impacts and adaptive responses to climate change: A Canadian forest sector perspective.* Information Report NOR-X-373. Natural Resources Canada, Canadian Forest Service, Northern Forestry Centre.

Indian and Northern Affairs Canada. 2003. *Comprehensive Claims Policy and Status of Claims.* Update.

Indian and Northern Affairs Canada. 1995. *Federal Policy Guide: The Government of Canada's Approach to Implementation of the Inherent Right and the Negotiation of Aboriginal Self-Government.*

Natural Resources Canada. 2004. *Climate Change Impacts and Adaptation: A Canadian Perspective.*

Royal Commission on Aboriginal Peoples. 1996. *Report of the Royal Commission on Aboriginal Peoples.* Part Two.

Senate Subcommittee on the Boreal Forest. 1999. *Competing Realities: The Boreal Forest at Risk.* Final Report.

Spittlehouse, D. 1997. "Forest Management and Climate Change." Pp. 24-1–24-8 in E. Taylor and B. Taylor (eds.), *Responding to Global Climate Change in British Columbia and the Yukon.* Environment Canada.

Standing Senate Committee on Agriculture and Forestry. 2003. *Climate Change: We Are at Risk.* Final Report.

Statistics Canada, "Canada's Aboriginal Population in 2017." *The Daily,* June 28, 2005. Available at: **www.statcan.ca/Daily/English/050628/d050628d.htm**.

Provincial/Territorial Government Publications

Alberta Environmental Protection. 1999. *The final frontier: protecting landscape and biological diversity within Alberta's boreal forest natural region.* Protected area report 13. Edmonton.

Government of Quebec. 2004. *Final Report: Commission for the study of public forest management in Québec.*

Manitoba Conservation. n.d. *East Side Lake Winnipeg, Round Table Terms-of-Reference.* Available at: **www.gov.mb.ca/conservation/wno/round-table/index.html**.

Other Publications

Agreement concerning a new relationship between Le Gouvernement du Québec and The Crees of Québec, February 7, 2002. Available at: **www.autochtones.gouv.qc.ca/relations_autochtones/ententes/cris/20031212_en.htm**.

Cairns, M.A., and R.A. Meganck. 1994. "Carbon sequestration, biological diversity, and sustainable development: Integrated forest management." *Environmental Management* 18: 13–22.

Canadian Association of Petroleum Producers. 2004. *Best Management Practice: Evolving Approaches to Minimize the Footprint of the Canadian Oil and Natural Gas Industry.*

Canadian Boreal Initiative. 2003. *The Boreal Forest at Risk: A Progress Report.*

———. 2003. *Boreal Framework Agreement.*

———. 2005. *Conserving Canada's Boreal Forest Region: A Status Report.*

Chalifour, N. n.d. "Encouraging the Transition to Sustainable Forestry in Canada with Ecological Fiscal Reform – Potential and Pitfalls."

Cumming, E.E., K.A. Hobson and S.L. Van Wilgenburg. 2001. "Breeding bird declines in the boreal forest fringe of Western Canada: Insights from long-term BBS routes." *The Canadian field-naturalist* 115: 425–435.

Dale, V.H., L.A. Joyce, S. McNulty, R.P. Neilson, M.P. Ayres, M.D. Flanningan, P.J. Hanson, L.C. Ireland, A.E. Lugo, C.J. Peterson, D. Simberloff, F.J. Swanson, B.J. Stocks and B.M. Wotton. 2001. "Climate change and forest disturbances." *BioScience* 51: 723–734.

ForestEthics. 2004. *Bringing Down the Boreal: How U.S. Consumption of Forest Products Is Destroying Canada's Endangered Northern Forests.*

Guy, R.D., and A. Benowicz. 1998. *Can afforestation contribute to a reduction in Canada's net CO_2 emissions?* Canadian Pulp and Paper Association.

Hobson, K.A., E.M. Bayne and S.L. Van Wilgenburg. 2002. "Large scale conversion of forest to agriculture in the boreal plains of Saskatchewan." *Conservation Biology* 16: 1530–1541.

Holling, C.S. 2001. "Understanding the complexity of economic, ecological and social systems." *Ecosystems* 4: 390–405.

Kennett, S.A. 2004. *Integrated Landscape Management in Canada: Initial Overview and Analytical Framework.* Prepared for the International Council on Mining and Metals. Available from the author at the Canadian Institute of Resources Law or from Tony Andrews, Executive Director, Prospectors and Developers Association of Canada.

Malcolm, J.R., L. Canran, L.B. Miller, T. Allnutt and L. Hansen. 2002. Habitats at risk. *Global warming and species loss in globally significant terrestrial ecosystems.* WWF-World Wide Fund for Nature.

Mining Association of Canada. 2004. *Towards Sustainable Mining: Progress Report.*

Mining Watch Canada. 2001. *The Boreal Below: Mining Issues and Activities in Canada's Boreal Forest Region.*

National Aboriginal Forestry Association. 2005. *Boreal News & Aboriginal Views* 1, 1 (January).

———. 2005. *Institutional Approaches to Aboriginal Forestry: Incremental Steps Towards Meaningful Aboriginal Participation.*

Nelson, H., and I. Vertinsky. 2004. "The International Trade and Environmental Regime and the Sustainable Management of Canadian Forests." Chapter 11 in S. Kant and R. Berry (eds.), *Sustainability, Institutions and Natural Resources: Institutions for Sustainable Forest Management.* Springer.

Olewiler, N. 2004. *The Value of Natural Capital in Settled Areas of Canada.* Ducks Unlimited Canada and the Nature Conservancy of Canada.

Peterson, E.B., G.M. Bonner, G.C. Robinson and N.M. Peterson. 1999. *Carbon sequestration aspects of an afforestation program in Canada's prairie provinces.* Victoria, B.C. Nawitka Renewable Resource Consultants.

Robins, C.S., D. Bystrak and P.H. Geissler. 1986. *The breeding bird survey: Its first fifteen years.* Fish and Wildlife Service Research Publication number 157. USDA.

Robinson S.K., F.R. Thompson, T.M. Donovan, D.R. Whitehead and J. Faaborg. 1995. "Regional Forest Fragmentation and the Nesting Success of Migratory Birds." *Science* 267: 1987–1990.

Ross, M. and P. Smith. 2002. *Accommodation of Aboriginal Rights: The Need for an Aboriginal Forest Tenure (Synthesis Report).* Sustainable Forest Management Network, University of Alberta.

Shaw Development Consultants. 2005. *First Nations Communities: Taking Our Place in the Forest Economy.* Submission to the Wakenagun Community Futures Development Corp. Aboriginal Forestry Workshop, held January 20–21, 2005.

Stewart, R., D. Spittlehouse and E. Wheaton. 1998. "Climate change: implications for the boreal forest." Pp. 86–95 in A. Legge and L. Jones (eds.), *Emerging air issues for the 21st century: The need for multidisciplinary management.* Proceedings of an international specialty conference jointly sponsored by the Air and Waste Management Association, the Association of Professional Engineers, Geologists and Geophysicists of Alberta, and the Alberta Society of Professional Biologists, held in Calgary, Alberta, September 22–24, 1997. Saskatchewan Research Council.

Wilson, J. and J. Graham. 2004. *Relationships between First Nations and the Forest Industry: The Legal and Policy Context.* Prepared for the National Aboriginal Forestry Association, the Forest Products Association of Canada and the First Nations Forestry Program. Institute on Governance.

ENDNOTES

Section 1

1 In this report, "boreal" refers to the entire region of the boreal ecosystem, which is made up of three distinct sub-regions: aspen parklands, the boreal forest and the taiga.

2 For full case study texts, see: **www.nrtee-trnee.ca**.

3 Environment Canada, *The State of Canada's Environment – 1996*, "Glossary of Selected Terms" (1996). Available at: **www.ec.gc.ca/soer-ree/English/SOER/1996report/Doc/1-10-1.cfm**.

Section 2

1 For a more detailed discussion of the political, socio-economic and environmental context for policy making in Canada's boreal, see: Senate Subcommittee on the Boreal Forest, *Competing Realities: The Boreal Forest at Risk*. Final Report (1999); and Canadian Boreal Initiative, *Conserving Canada's Boreal Forest Region: A Status Report* (2005).

2 Canadian Forest Service, *Climate change and forests: Context for the Canadian Forest Service's science program*, 1999.

3 Canadian Boreal Initiative, *The Boreal Forest at Risk: A Progress Report* (2003).

4 M. Ross and M. Wenig, *Background Report on the Boreal Forest* (NRTEE, 2003), p. 1.

5 Based on ibid.; P. Lee and Global Forest Watch, *Boreal Canada: State of the Ecosystem, State of Industry, Emerging Issues and Projections* (NRTEE, 2004); and Mining Watch Canada, *The Boreal Below: Mining Issues and Activities in Canada's Boreal Forest Region* (2001).

6 Data cited in Canadian Boreal Initiative, *Conserving Canada's Boreal* (2005).

7 Cited in Lee and Global Forest Watch, *Boreal Canada* (2004) and Ross and Wenig, *Background Report* (2003).

8 Environment Canada 2000 data, cited in Ross and Wenig, *Background Report* (2003).

9 Cited in Mining Watch Canada, *The Boreal Below* (2001).

10 For details on resource development legislation and regulations for each province, see Ross and Wenig, *Background Report* (2003).

11 Lee and Global Forest Watch, *Boreal Canada* (2004), pp. 40–41.

12 H. Nelson and I. Vertinsky, "The International Trade and Environmental Regime and the Sustainable Management of Canadian Forests," Chapter 11 in S. Kant and R. Berry (eds.), *Sustainability, Institutions and Natural Resources: Institutions for Sustainable Forest Management* (Springer, 2004).

13 Ibid.

14 Quebec Mineral Exploration Association, Ontario Prospectors Association and Quebec Mining Association, Communication to the NRTEE, September 2004.

15 The NRTEE has been conducting a research program on capital markets and sustainability. More information on the potential role of capital markets in encouraging sustainable development is available at: **www.nrtee-trnee.ca/eng/programs/Current_Programs/Capital-Markets/Capital-Markets_E.htm**.

16 Nelson and Vertinsky, "The International Trade" (2004), p. 18.

17 External Advisory Committee on Smart Regulation, *Smart Regulation: A Regulatory Strategy for Canada*, Report to the Government of Canada (2004).

18 H. Nelson and I. Vertinsky, *An Assessment of Policy Measures Designed to Achieve Sustainability in the Boreal: Final Report* (NRTEE, 2005).

19 NRTEE, *Toward a Canadian Agenda for Ecological Fiscal Reform: First Steps* (2002).

20 Commissioner of the Environment and Sustainable Development, Report of the *Commissioner of the Environment and Sustainable Development to the House of Commons – 2004* (2004).

[21] For a detailed discussion of the legal, economic, environmental and social issues related to Aboriginal peoples in the boreal, see B. Morse, J. Benidickson, S. Elgie, R. Flewelling, M. Mallet and K. Loon, *Aboriginal Issues in Canada's Boreal Forest* (NRTEE, 2005).

[22] R. Stewart, D. Spittlehouse and E. Wheaton, "Climate change: implications for the boreal forest," in A. Legge and L. Jones (eds.), *Emerging air issues for the 21st century: The need for multidisciplinary management*, Proceedings of an international specialty conference jointly sponsored by the Air and Waste Management Association, the Association of Professional Engineers, Geologists and Geophysicists of Alberta, and the Alberta Society of Professional Biologists, held in Calgary, Alberta, September 22–24, 1997 (Saskatchewan Research Council, 1998), p. 88.

[23] Ibid., pp. 91–92.

[24] J.R. Malcolm, L. Canran, L.B. Miller, T. Allnutt and L. Hansen, *Habitats at risk. Global warming and species loss in globally significant terrestrial ecosystems* (WWF-World Wide Fund for Nature, 2002), pp. 7–9.

[25] E.E. Cumming, K.A. Hobson and S.L. Van Wilgenburg, "Breeding bird declines in the boreal forest fringe of Western Canada: Insights from long-term BBS routes," *The Canadian field-naturalist* 115 (2001): 425–435.

[26] K.A. Hobson, E.M. Bayne and S.L. Van Wilgenburg, "Large scale conversion of forest to agriculture in the boreal plains of Saskatchewan," *Conservation Biology* 16 (2002): 1540.

[27] S.K. Robinson, F.R. Thompson, T.M. Donovan, D.R. Whitehead and J. Faaborg, "Regional Forest Fragmentation and the Nesting Success of Migratory Birds," *Science* 267 (1995): 1987–1990.

[28] Hobson et al., "Large scale conversion" (2002).

[29] Alberta Environmental Protection, *The final frontier: protecting landscape and biological diversity within Alberta's boreal forest natural region*, Protected area report 13 (Edmonton, 1999).

[30] M.A. Cairns and R.A. Meganck, "Carbon sequestration, biological diversity, and sustainable development: Integrated forest management," *Environmental Management* 18 (1994): 13–22; R.D. Guy and A. Benowicz, *Can afforestation contribute to a reduction in Canada's net CO_2 emissions?* (Canadian Pulp and Paper Association, 1998); E.B. Peterson, G.M. Bonner, G.C. Robinson and N.M. Peterson, *Carbon sequestration aspects of an afforestation program in Canada's prairie provinces* (Victoria, B.C.: Nawitka Renewable Resource Consultants, 1999).

[31] Canadian Forest Service, *Forest sector table foundation paper*, Mimeograph (Ottawa, September 28, 1998).

[32] Hobson et al., "Large scale conversion" (2002), p. 1539.

[33] At the same time, soil conditions are generally less conducive to agricultural use in more northerly regions of the boreal, and there is the potential for increasingly severe and frequent drought events as the result of climate change. Both of these factors could work against any tendency toward further agricultural conversion of transition zone forests.

[34] The NRTEE's Capital Markets and Sustainability Program has commissioned a research paper to consider how corporations might redirect their "community investment" efforts toward making capital investments in local businesses and away from a purely philanthropic model; this move could help foster diversification of the economic base and a culture of accountability rather than dependency.

Section 3

[1] *Market failures* are largely due to environmental externalities. These externalities occur when firms do not take environmental values into full account in their operational decisions, either because they are not rewarded for generating positive outputs or are not taxed for producing negative outputs that affect other interested parties. *Policy failures* can result from a lack of capacity, insufficient information or overload. *Institutional failures* can result from a lack of resources or inadequate structures to deal with new issues, conflicts or overlaps and gaps in responsibilities.

[2] Canadian Boreal Initiative, *Conserving Canada's Boreal Forest Region: A Status Report* (2005).

[3] Ibid.

[4] The NRTEE has focused on this important question in previous work. See: NRTEE, *Environment and Sustainable Development Indicators for Canada* (2003).

[5] Canadian Boreal Initiative, *Conserving Canada's Boreal* (2005).

[6] Cited in ibid.

[7] Canadian Environmental Assessment Agency, *Considering Aboriginal traditional knowledge in environmental assessments conducted under the* Canadian Environmental Assessment Act – Interim Principles. Available at: **www.ceaa-acee.gc.ca/012/atk_e.htm**.

[8] The *Canadian Environmental Assessment Act*, amended in 2003, recognizes the importance of Aboriginal traditional knowledge and allows such knowledge to be used in environmental assessments conducted under the Act. Under the Act, the Canadian Environmental Assessment Agency will establish an Aboriginal Advisory Committee to help develop guidelines for obtaining traditional knowledge and incorporating it into environmental assessments.

[9] Natural Resources Canada, *Climate Change Impacts and Adaptation: A Canadian Perspective* (2004).

[10] G. Hauer, T. Williamson and M. Renner, *Socioeconomic impacts and adaptive responses to climate change: A Canadian forest sector perspective*, Information Report NOR-X-373 (Natural Resources Canada, Canadian Forest Service, Northern Forestry Centre, 2001).

[11] Natural Resources Canada, *Climate Change Impacts* (2004).

[12] Ibid.

[13] Sweden, for example, has established "study circles" involving tens of thousands of citizens as means of educating people and encouraging dialogue. The NRTEE's M-KMA case study also described innovative approaches to consultation through advisory groups on issues related to the future of that region's boreal.

[14] National Aboriginal Forestry Association, *Institutional Approaches to Aboriginal Forestry: Incremental Steps Towards Meaningful Aboriginal Participation* (2005).

[15] Based in part on D. Spittlehouse, "Forest Management and Climate Change," pp. 24-1–24-8 in E. Taylor and B. Taylor (eds.), *Responding to Global Climate Change in British Columbia and the Yukon* (Environment Canada, 1997); V.H. Dale, L.A. Joyce, S. McNulty, R.P. Neilson, M.P. Ayres, M.D. Flanningan, P.J. Hanson, L.C. Ireland, A.E. Lugo, C.J. Peterson, D. Simberloff, F.J. Swanson, B.J. Stocks and B.M. Wotton, "Climate change and forest disturbances," *BioScience* 51 (2001): 723–734; and C.S. Holling, "Understanding the complexity of economic, ecological and social systems," *Ecosystems* 4 (2001): 390–405.

[16] N. Chalifour, "Encouraging the Transition to Sustainable Forestry in Canada with Ecological Fiscal Reform – Potential and Pitfalls," Unpublished paper, n.d., p. 7.

[17] Ibid.

[18] For a more comprehensive review of EFR issues and a detailed analysis of possible policy measures, see: N. Chalifour, "Encouraging the Transition" (n.d.).

[19] See: Department of Finance Canada, *Budget 2005 – Delivering on Commitments*, Chapter 5: "Moving Toward a Sustainable Environment and Sustainable Communities." Available at: **www.fin.gc.ca/budget05/bp/bpc5e.htm**.

[20] Ibid., p. 315.

[21] For example, the *Canada Mining Regulations*, C.R.C. 1978, c. 1516 and the *Canada Petroleum Resources Act*, R.S.C. 1985, c. 36 provide respectively for the granting of mining and oil and gas rights in the Northwest Territories.

[22] M. Ross and M. Wenig, *Background Report on the Boreal Forest* (NRTEE, 2003), p. 6.

[23] D. Farr, S. Kennett, M. Ross, B. Stelfox and M. Weber, *Al-Pac Case Study*, Part 2 (NRTEE, 2004); for a more detailed discussion of ILM, see, for example, S.A. Kennett, *Integrated Landscape Management in Canada: Initial Overview and Analytical Framework*, Prepared for the International Council on Mining and Metals (2004). Available from the author at the Canadian Institute of Resources Law or from Tony Andrews, Executive Director, Prospectors and Developers Association of Canada.

[24] Farr et al., *Al-Pac Case Study*, Part 2 (2004).

[25] Ross and Wenig, *Background Report* (2003).

[26] Royal Commission on Aboriginal Peoples, *Report of the Royal Commission on Aboriginal Peoples*, Part Two (1996), pp. 425 and 448.

[27] Manitoba Conservation, *East Side Lake Winnipeg, Round Table Terms-of-Reference* (n.d.). Available at: **www.gov.mb.ca/conservation/wno/round-table/index.html**.

[28] *Agreement concerning a new relationship between Le Gouvernement du Québec and The Crees of Québec*, February 7, 2002. Available at: **www.autochtones.gouv.qc.ca/relations_autochtones/ententes/cris/20031212_en.htm**.

[29] See: *Haida Nation v. British Columbia (Minister of Forests)*, [2004] SCC 73 and *Taku River Tlingit First Nation v. British Columbia (Project Assessment Director)*, [2004] SCC 74.

[30] Statistics Canada, "Canada's Aboriginal Population in 2017," *The Daily*, June 28, 2005. Available at: **www.statcan.ca/Daily/English/050628/d050628d.htm**.

[31] *Agreement concerning a new relationship between Le Gouvernement du Québec and The Crees of Québec*, February 7, 2002.

[32] Ibid:

Appendix C

[1] The information summarized below comes from M. Ross and M. Wenig, *Background Report on the Boreal Forest* (NRTEE, 2003).

[2] Senate Subcommittee on the Boreal Forest, *Competing Realities: The Boreal Forest at Risk*, Final Report (1999).

[3] Government of Quebec, *Final Report: Commission for the study of public forest management in Québec* (2004).

[4] Senate Subcommittee on the Boreal Forest, *Competing Realities: The Boreal Forest at Risk*, Final Report (1999).

[5] Global Forest Watch Canada, *Canada's Forests at a Crossroads: An Assessment in the Year 2000* (2001).

[6] Canadian Association of Petroleum Producers, *Evolving Approaches to Minimize the Footprint of the Canadian Oil and Natural Gas Industry* (2004).

NOTES

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